AIRFIX magazine

FEBRUARY, 1968

FOR PLASTIC MODELLERS

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MONTHLY

IN THIS ISSUE ★ Modelling military Land-Rover variants

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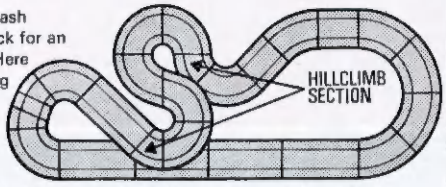

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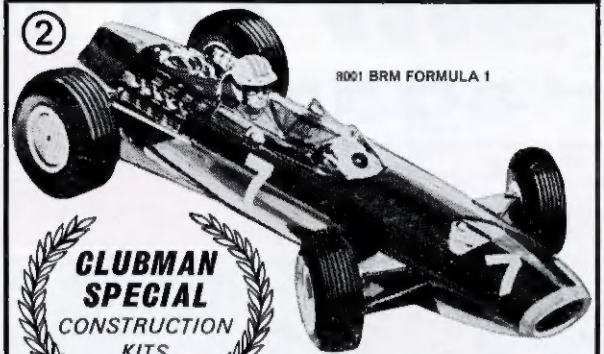

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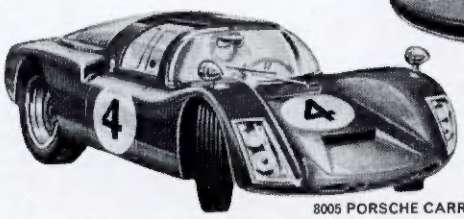

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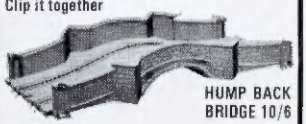

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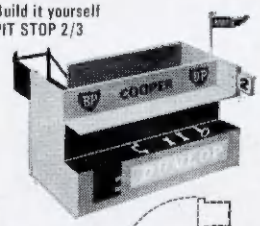

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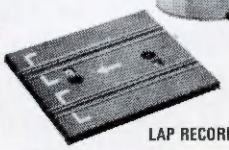

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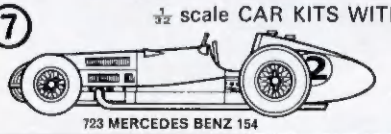

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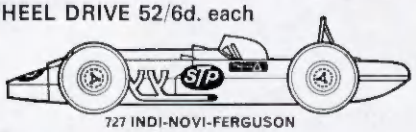

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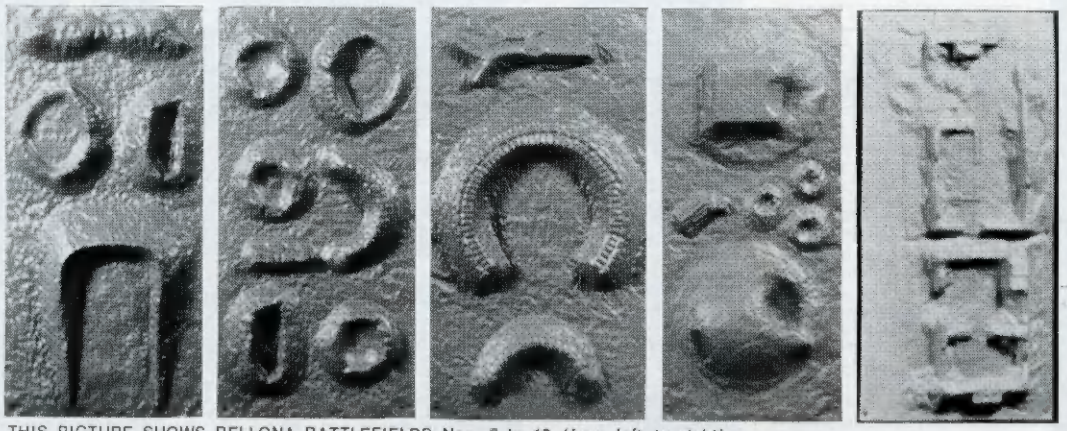

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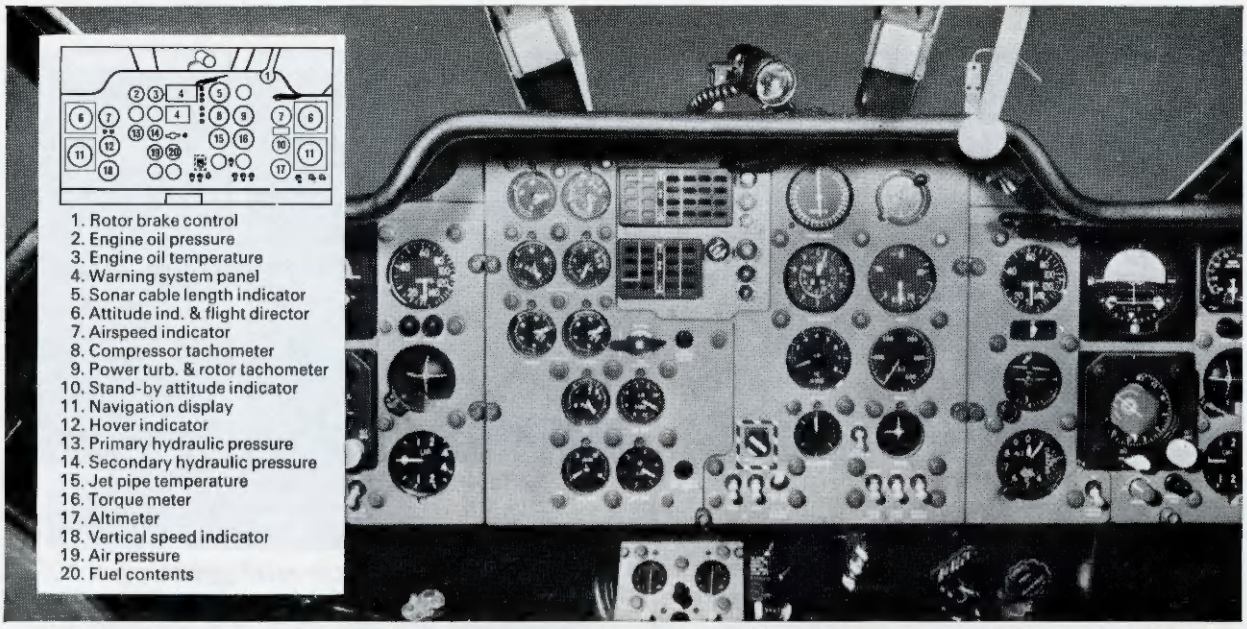

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Volume 9, Number 6

AIRFIX FOR PLASTIC MODELLERS

magazine

February, 1968

IN THIS ISSUE

COVER PICTURE

Modern military forces are more dependent than ever before on aircraft for rapid deployment to any trouble spot; inter-service co-operation is well emphasised in this painting by Wootton showing men of a light battery, RA, limbering up their air-portable 105 mm pack howitzers and Land-Rover 9 towing vehicles after unloading from RAF Air Support Command Andovers on an advanced unprepared landing strip. Land-Rover conversions are given on page 212.

(Illustration courtesy The Rover Company Ltd)

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ROMAN FRIENDS AND FOES

BY BARRY O'BRIEN

NOW that the Airfix Romans have time to make their presence felt, wargamers and others will be looking around for suitable allies and enemies to use with them. This article describes various simple conversions.

Slingers

The slinger was known in warfare from the very earliest times. The Romans recruited them from various regions of the Empire that produced good slingers, for it must be remembered that, like the English longbowman, the slinger was the product of training which started in early boyhood, so that the sling became part of the way of life, being used for hunting apart from warfare. A good slinger was as accurate as most bowmen, and slings could outrange the weaker short bows. Certain parts of the Ancient World seemed to produce skilled slingers, in particular the Balearic Islands, Crete and Rhodes. The slinger would, whenever possible, use lead 'pebbles' of more or less a standard size, but could of course, use any suitable size stone at need. He would usually be unarmoured, and would not wear uniform as such, but would be dressed in the clothes which he would wear in his home country. For close fighting he would have a short sword, and possibly a small shield, but a prudent commander would avoid committing slingers to close action.

Two of the Airfix Robin Hood set make the basis for slingers. One is the swordsman in cloak, and the other the archer who has just released his arrow. The swordsman has his sword cut away, and the thrown back hood of his cloak cut away from the back. The sling is then fitted as shown in the drawing.

The archer has to have his bow cut away, and also the stake (or arrow?) standing behind him. He then needs no more work than to fit the sling as shown. In either case a small round shield can be glued to the left forearm if desired. I find that useful small shields of this kind may be made by utilising the cut out piece of card that is left when a hole is punched in thin card by means of a standard office punch. The archer conversion has a round plain helmet, and this can be left and coloured to represent either bronze or iron. The converted swordsman can be left either bare-headed, or as in the two examples have a soft hat made of a slice from a piece of plastic sprue pressed lightly into position with a small soldering iron.

When painting, remember that the throwing arm would always be bare, and the figures could be shown bare legged below the cloak or tunic, either barefoot or with sandals or light shoes. These people would be unlikely to afford flamboyant colours and costumes, and of the three shown, two have dark blue tunics with a brown coat, and the other has a dark brown tunic with light brown belt. Use the slinger conversions to fight either with or against the Romans.

Camel Lancer

The Roman soldier was familiar with the camel for his campaigns in Egypt and against the Parthians and Persians. Camels were used as baggage animals by everyone and as heavy cavalry or to carry archers. One Parthian general used them as first line transport to maintain a continual supply of arrows to horse bowmen who had surrounded a Roman army at Carrhae and eventually inflicted on it one of the worst defeats ever suffered by the Romans. One aspect of the camel in warfare was often used—horses unused to camels would not go near them.

Very little work is needed to alter the Airfix camel riders to make a lancer. The rifle is cut away, and a hole bored in the right hand to take the lance, made of wire about 1 mm thick and about 40 mm long. The lance is passed through the hand until the end rests on the right foot, and a touch of glue applied at both points. The robe of the camel rider should but cut away at the bottom to simulate baggy trousers, but apart from that no other alteration need be made to either camel or rider, other than to fix a shield to the left upper arm. The figure shown is painted to represent a rider in full mail but with an almost completely covering robe. Only the front at the neck is shown as armour, together with a mail cap and protection to the cheeks and neck. This cap is covered with a light material cape to cover the head and back of the neck.

The camel is, of course, 'camel colour', which strangely seems to vary from camel to camel, but for those I have painted I have used mixtures of light earth, track colour, and khaki, and the result seems about right. The rider has a yellow robe, and the camel gear and trappings can be in almost any colours that one wishes.

The completed camel lancer could be a Bedouin in Parthian service or a Parthian; and a 'regiment' of these make spectacular opponents for the Romans.

Armoured Horse Archer

The horse archer first appeared amongst the nomadic tribes who moved and lived in the great areas of grassland and semi-desert that stretched from the borders of China to the Hungarian plains. Many of the great civilisations of old knew them as agile and elusive raiders with no base and no communications. The horse archer was eventually used by all the great powers of Ancient times, the Assyrians, Parthians, Persians, and the Romans (who hired them). In time, the horse archer developed from the original unarmoured, extremely light nomad rider into a regular cavalryman, with scale or mail armour, with the bow still his main weapon, but also with sword and shield as well, so that he was more than a match for the nomad rider from whom he had developed. However, he suffered from a lack of mobility compared with the latter, and only the lightly clad bowman with no hampering armour could fire in any direction from the saddle, at full speed, and even directly *behind* when retiring.

This is a more complex conversion than the others. The first step is to take a Roman Archer, and carefully cut off the quiver and the sword in its scabbard. The bowman is then cut cleanly in half just below the waist. The lower half is made from the Arab horseman or a US cavalryman, cut off at waist level. The two parts are joined together by a headless

Continued on page 238

Rare view of Dakota IV, KN340:VM-YBM, of 243 Sqn at Camden, Australia, in September, 1945. This is named Spirit of Middlesex *and is a sister machine of KN372:VM-YCL drawn on this page. Colour scheme is basically similar but differs in detail as described at foot of page* (Photo G. Whitehead via M. Garbett).

SEAC Dakotas

BY ROBERT C. JONES

Dakota IV, KC576, 194 Sqn, Mingaladon

Black spinner

White code letter
Note azure blue inner to roundel

KC576

White serial on tailfin

Dakota IV, 981, 168 Sqn RCAF

Code 'QZ' and serial '981' in white

Centre of roundel overpainted white

981

Nose markings : black on natural metal

Black spinner

Natural metal cowlings, port and starboard
Note natural metal nose

VM-YCL

"Spirit of Lancashire"

Legend in white each side of nose

White tips to black spinners

Note neutral grey 'raised' to obliterate yellow of roundels

Serial and codes in white
Tail flash on this machine overpainted solid white

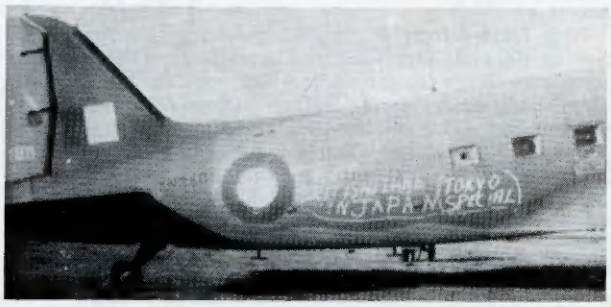
Black de-icer panels

Dakota IV, KN372, 243 Sqn, 1945

0 10 FT

Olive drab | Sea Grey Medium | Neutral Grey | Natural Metal

Matt black | White | Azure blue | Roundel blue

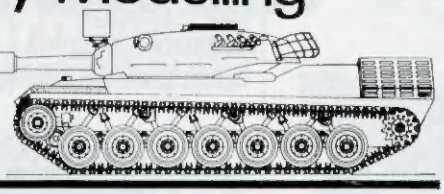


Another view *(left)* of KN340 : VM-YBM of 243 Sqn with the chalked inscription 'First British Plane in Japan (Tokyo Special)', also at Camden in September 1945. Like KN372 : VM-YCL *(above)*, this was a machine with 'C' Type roundels crudely altered to conform with SEAC practice. On KN372 the yellow in the fuselage roundel was overpainted with grey, but KN340 retains the yellow surround though the picture suggests an attempt to obliterate it. The red in all roundels was overpainted white, as was the red in the tailflash, though the entire tail flash of KN372 was overpainted.

Any of these colour schemes is applicable to the Airfix Dakota and the standard colours involved are now readily available to modellers in the Humbrol, Official, or Modelcolor ranges. Note detail differences on each machine mainly confined to intakes and aerials, easily incorporated in model. Simple way of making SEAC roundels is to overpaint centres of suitably sized standard upper wing roundels. For KN372 use standard roundels modified by painting.

Military Modelling

by Chris Ellis



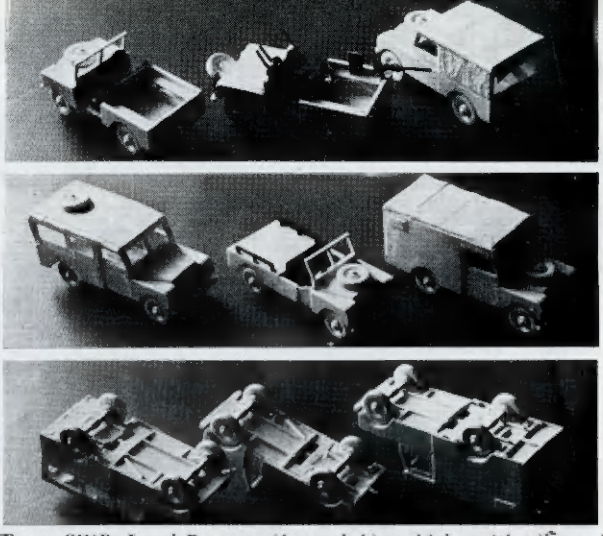
LAND-ROVER VARIANTS

PROBABLY the most familiar British army vehicle of all, from the mid-fifties right up to the present, is the ubiquitous Land-Rover, which is more widely used than any other, and is therefore an essential item for military modellers favouring the modern scene. Fortunately, an excellent Land-Rover *is* available in the Airfix range, though it comes as the towing vehicle for the Bloodhound and is not sold separately as a military item. Also, this Land-Rover is to exact 4 mm scale, so is perfect, as well, for railway modellers looking for lineside vehicles and aircraft modellers making up post-war RAF airfield scenes.

There are more than a dozen conversion possibilities with the Land-Rover to provide army/RAF/civilian variants and I have made six of them this month which should be useful to modellers in all these spheres.

Truck ¼ ton, 4 × 4, Land-Rover, Cargo: Designated FV 18001, this was the original version used by the army back in the early 'fifties when it was intended to supplement the specially designed Austin Champ field car. Subsequent to the demise of the Champ, however, the Land-Rover became the standard army field car. This is basically the variant provided in the Bloodhound kit and can be assembled just as it comes and painted dark green with a khaki tilt. I modified the model slightly, however, by taking one of the Bloodhound trailer wheels and cementing it as the spare wheel on the bonnet. I also 'opened' the tilt by sawing off the 'canvas' section of part 28 to leave only the tailboard to be cemented in place. The rear flap of the tilt is then represented by a small piece of rolled tissue paper stuck to the rear edge of the roof. The only other task was to file away the locating ridges inside the side walls so that they were not visible through the back of the model. These small alterations add greatly to the vehicle's realism. A further variant which can be made once the back is 'opened' is the Land-Rover with front line ambulance kit. This simply consists of suitable supports to take stretchers one each side

Completed models of **(top, left to right)** *Land-Rover with doors and tilt removed, and* **(above, left to right)** *air-portable LWB Land-Rover, Land-Rover Utility, Land-Rover Ambulance.*



Top: *SWB Land-Rovers, (from left) vehicle with tilt and doors removed, SAS Land-Rover, standard Land-Rover. Note bench seats in open variants.* **Centre:** *Unpainted models of LWB Utility, air-portable, and Ambulance models.* **Bottom:** *Underside view of same three models to show chassis extended with 6 mm strips of scrap plastic. Note tow hooks removed from Ambulance and Utility.*

in the back of the vehicle with the 'feet' end sticking out of the back. To make this, cement a strip of plastic card across the inside of the model—before cementing the roof in place—on a line with the top of the tailboard and just aft of the side doors. The model will then take a couple of stretchers from one of the Airfix 00 scale soldier sets. Land-Rovers used as front line ambulances carry a canvas strip which fits over the top of the tilt and laces to the bottom edge to display a red cross each side. This can be represented by a 10 mm wide strip of tissue paper with the small red crosses taken from the Airfix half-track kit.

Land-Rover ¼ ton, open version: To make the same vehicle as above but with tilt removed poses a few more problems as the Airfix model lacks internal details. To remove the tilt, simply omit the roof section, cut off the 'canvas' section from the tailboard, part 28, and cut away the 'canvas' side areas from the vehicle sides, parts 16 and 23. Then assemble in the normal way. I found plenty of steering wheels in my scrap-box from previous conversions, but if you've not got one, a good substitute is one of the handwheels from the Flak 36 with the knob removed. Likewise, I had plenty of spare seats left from previous conversions, but they can be made very simply from plastic card as shown in the drawing. Finally, you need to box in the wheel arches to form a bench seat each side. This is done with 4 mm × 18 mm strips of plastic card cemented over the arches.

Further variations on the basic theme are to 'fold' the windscreen flat by sawing it off at the bottom edge and cementing it over the top of the spare wheel, and to remove the doors, simply by sawing away the complete section before assembly.

SAS Land-Rover: For patrol purposes, the Special Air Service Regt use specially fitted Land-Rovers. Those used in temperate climes are short wheel base vehicles. Modifications to the basic model should include removal of the side doors as described above and complete removal of the windscreen, this being sawn off immediately at the bottom of the window pillars. A jerrican goes in front of each mudguard, resting on top of the bumper, and suitable mouldings can come from the Airfix half-track or the Roco accessory pack. If you can't manage either of these, then the ammunition boxes from the Airfix 6 pdr gun make good substitutes. Front seats and steering wheel are fitted as above, and a single seat—

Drawings for Land-Rover conversions. **Key:** *(1) Utility body sides. (2) Utility rear, score in doors on side and rear and cut out windows before cutting out remainder. (3) Ambulance sides. (4) Ambulance rear. (5) Extra side section for air-portable vehicle. (6) Chassis modification for LWB models—not to scale. (7) Seat profile. (8) Twin Vickers gun for SAS vehicle. (9) Browning .30 gun. All full-size except 6.*

which I took from a half-track kit—is cemented in the back, centrally and close up to the front bench seats.

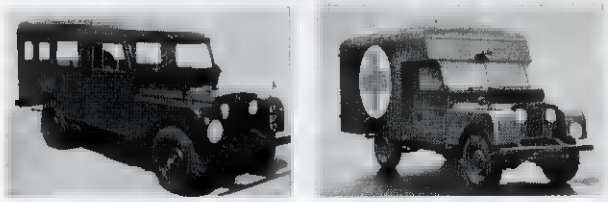
Box in the rear wheels, then place a rectangle of scrap plastic 4 mm × 8 mm on the right-hand bench seat as a radio. Armament is usually a single Bren or GP machine gun on the doorpost of the driver's side. Twin Vickers guns or GP machine guns are mounted on the left side of the front bulkhead and a .30 machine gun is mounted in the rear right corner. I made the latter weapon by trimming a Browning from the half-track down to 12 mm overall. Armament on these vehicles does, in fact, vary; you could put another .30 on the front bulkhead in place of the other machine guns. Finally, cement the spare wheel on the front bumper angled upwards at 45 degrees.

Truck 4 × 4, ¼ ton, Land-Rover Utility: This is a long wheel base vehicle with an aluminium estate car type of body, used as a personnel carrier or staff car. In the latter case, map tables are included inside for staff officers. To make the long wheel base chassis, saw through the floor, part 17, just behind the widest part (as in drawing 6) and insert a 6 mm deep strip of scrap plastic or plastic card, 19 mm wide, and re-cement. I also added another strip lengthways over the top of the join to make a stronger job. Ensure that the floor sets perfectly straight, then cut away the 'canvas' from the sides and cut through the sides immediately aft of the doors and assemble the remains to leave a deliberate gap. Then, referring to drawing 1, cut out two new body sides from plastic card and cement them over the remains of the original sides, joining them with a back cut out as in drawing 2. I used the roof straight from the kit, and then cut the rear segment from a discarded roof to fill the gap that remains due to the lengthened wheelbase. The ugly join that remains is conveniently disguised by a flat 38 mm × 20 mm rectangle of card which is cemented over the roof to depict the insulated roof with which these vehicles were fitted. The spare wheel can go either on the bonnet, on the roof, or on the rear door.

This type of Land-Rover is also used by the RAF so would be an excellent addition to an airfield scene. A civilian version is also very common, identical to the military type. Army designation for this vehicle is FV 18004, distinguishing it from a later type with fibreglass body on the Mk II chassis.

Land-Rover Ambulance: Designed as an ambulance for forward areas, this vehicle carries two or four stretchers or sitting cases according to internal fittings. There are at least three variations on the body according to builder, but I've chosen the earliest and the simplest, as it's easier to make. Chassis is lengthened as described above and the new body parts are cut as given in drawings 3 and 4. I made the small side and door vents from small rectangles of card simply stuck on the basic body and painted black. Roof is made as described for the utility except that a longer rear segment is required to match the longer body. Also the insulated roof section is omitted. Crosses can come from the half-track kit or you can paint larger ones to match the prototype picture. This vehicle is used by both the army and RAF and is a 'must', certainly, for any airfield scene.

Truck 4 × 4, ¾ ton, Land-Rover (Air-Portable): This is an interim design, based on the later Mk II chassis, but fitted with a low lightweight body to enable two or three such vehicles to be stacked in the hold of an RAF transport plane. The chassis is lengthened as before, but this time the sides are cut immediately aft of the door pillars and reduced in height to 7 mm from the bottom. All detail is filed from the sides and they are cemented in place. A new side piece (drawing 5) is cut to fill the gap, and seats and steering wheel are added as before. The entire rear of the vehicle is covered in with a 24 mm × 23 mm sheet of plastic card, and hand rails, 2 mm high and 18 mm long, are made from wire, staples, or stretched sprue and cemented each side at the rear as shown in the pictures.



Left: *The full-size Land-Rover LWB Utility.* **Right:** *The full-size Land-Rover Ambulance. Note numberplate position and yellow bridge plate on front.*

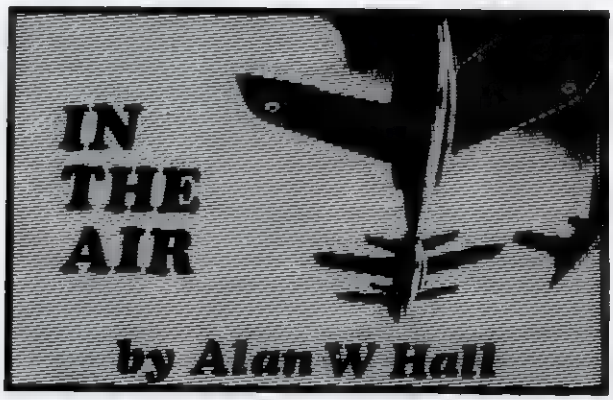
THE other model this month is a very simple one for beginners, the Soviet JS4 of 1950 vintage which can easily be made from the JS3 kit or even from a completed JS3. This vehicle had the later pattern 122 mm gun with fume extractor as fitted to the T10, plus an infra-red searchlight (also found on later JS3s), and other small improvements.

The fume extractor is the appropriate section cut from the Centurion gun left over from December's ARV conversion. Cut the JS3 barrel 12 mm from the end, insert the fume extractor, cut away a corresponding length of JS3 barrel and cement the extractor on to the remainder. Then ensure that it all sets in a straight line. The infra-red device is a section of JS3 fuel tank, sliced 2 mm from the end on a 6 mm square of scrap plastic 2 mm deep. This is cemented to the top flange of the mantlet and held in line so that it elevates with the gun. Finally add 2 mm deep strips of card along the lower edges of the hull sides, and add a curved mudguard section over the rear of the track cemented to the rear hull. The mudguards should be carried round the mudguards fore and aft by suitable trimming. The two extra fuel tanks on the hull rear are 'optional extras' and can be added if you have them to spare.

Above: *The completed JS4 model.*

IN a blaze of publicity the world's first supersonic transport aircraft, the Anglo-French Concorde, ceremonially left its flight test shed at Toulouse on December 11 to patriotic speeches by ministers and manufacturers.

In the company of many others from all parts of the world I spent a chilly afternoon listening to speeches from the British Minister of Technology, Mr Wedgwood Benn; the French Minister of Transport, Monsieur Chamant; Sir George Edwards of BAC; and Monsieur Maurice Papon of Sud Aviation. Each, in his own way, emphasised the belief that Concorde would reach production status and that within two to three years these aircraft would be starting on their careers with the world's airlines.



In spite of the confidence expressed there is a great deal to do before Concorde can be accepted. The problems of the sonic boom, integration with sub-sonic aircraft, the fares structures on the supersonic routes, and many other operational problems have to be sorted out before the airlines will accept the aircraft as being the one they want. Both Britain and France have spent between them something like £500 million on development. Has it all been worth while?

Although there has been considerable criticism from sections of the press and from other sources connected with aviation, I am of the opinion that Concorde *must* be a success. One dreads a repetition of the Brabazon affair where an aircraft gained so much pre-flight publicity that it was a severe blow to British prestige when it went no further than the prototype stage.

There can be no doubt that Britain and France have a three year lead over the Americans. The US equivalent, which is an even more radical design than the Concorde, cannot possibly cut down the lead which has been built up in Europe in spite of the great technical resources of the American aircraft industry.

Providing that Concorde maintains its lead, and there is no reason why this should not be so, I see the American SST as being the logical onward step by the airlines in their re-equipment programmes. Whether Concorde will last in service for any length of time is anybody's guess. I foresee work going on to produce a Mark 2 Anglo-French design accommodating more passengers at an increased speed rather than design studies being made for an aircraft to travel at speeds in the Mach 6 region. I think that we have reached the end of the road as far as civil aircraft speeds are concerned until there is a radical breakthrough in propulsion methods and airframe construction techniques.

A Mach 6 transport aircraft could be produced today, figuratively speaking, but the cost of doing this would completely outweigh the economics of purchase by an airline. The development costs needed to take aircraft cruising speeds above Mach 2-3 would be so enormous that no government or even consortium of governments would consider the financing of the project, let alone the aircraft manufacturers themselves.

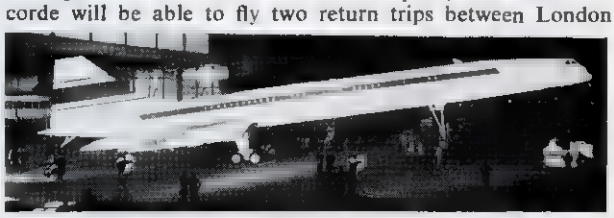
In my own opinion, aircraft design teams will follow the trend, already taking shape, of designing large sub-sonic aircraft carrying more than 200 passengers at a seat-mile cost far lower than the present standards. Developments in engine performance giving economies of operation superior to present-day standards can be expected which, linked to the jumbo-jet type of aircraft, will produce airline fares within the scope of more and more people. In another 15-20 years I can see British tourists flocking to the United States or India for their holidays in the same way that they have come to visit the Mediterranean coast since the early 'fifties.

Tokyo to London in 'Half an Hour'

Air travel for the masses will remain at sub-sonic speeds, but in spite of this there will always be a considerable need for high speed transport which can take the businessman to his destination in as quick a time as possible. Time is money so they say and in the present mad state of the world this type of passenger will always demand rapid transportation and consider higher costs worth while. With a cruising speed of about 1,400 mph it is interesting to think that a passenger flying across Siberia from Tokyo to London would, by his watch, only take half an hour on the journey!

At Concorde cruising speed, approaching 25 miles per minute, the distance between London and Toulouse, the journey I did on December 11, would take 25 minutes against almost two hours by Britannia.

In an interview before the roll out at Toulouse, Sir Giles Guthrie, Chairman of BOAC, announcing the appointment of Captain James Andrew to be the Flight Development Manager and BOAC's first Concorde pilot, said that Concorde will be able to fly two return trips between London



Above: *The Concorde 001 prototype leaves Toulouse-Blagnac for transfer to its flight test shed at Toulouse-St Martin a week before the ceremonial roll-out.* **Heading:** *The historic moment of the official roll-out as the tractor starts to pull Concorde 001 from the shed.*

Top: *Impressive view of the 001 prototype being towed across Toulouse airfield. Colour of this machine is white overall with red and blue cheat lines.* **Above:** *Pomp and circumstance as RAF and French Air Force bands play Concorde from its test shed* (Mintech photo).

and New York—four Atlantic crossings—in the course of a normal day's work. This thought puts the Atlantic crossing in a new perspective and will make a supersonic trip to the US the near equivalent of a day's cross-Channel excursion.

'Once test flying and development work starts to produce detailed information on performance and economics, BOAC will get down to doing its own supersonic sums,' added Sir Giles. This direct hint suggests that BOAC may well be the first airline to confirm its option on the purchase of Concorde and may well lead the 16 other airlines which have so far placed options on 74 aircraft.

As the 001 prototype, which was rolled out at Toulouse, enters the final phase of ground testing of engines, systems and equipment, it is fully expected that its first flight will come on 'February 28 or not long after', according to Sir George Edwards. Meanwhile, the prototype 002 is well advanced at the BAC factory at Filton, Bristol. Work has already begun at Sud Aviation and BAC centres on manufacture of the two pre-production aircraft 01 and 02 and the two complete airframes for static and fatigue ground testing.

It is pleasing to note that dates which were set over two years ago giving specific times for phases of the production are being kept.

Concorde with ■■ 'E'

Mr Wedgwood Benn's announcement that Concorde in future would be spelt with an 'e' on the end brought a spark of humour to an otherwise rather serious day. The name Concorde was originally conceived by the son of an employee at BAC's Filton works. It was accepted by the French as being an appropriate name for the aircraft but British government circles, the Ministry of Aviation and the Ministry of Technology, its successor, always used the British spelling. By conceding to the French version with the final 'e', Mr Wedgwood Benn said that this would end the only disagreement between the two sides and that, after all, the 'e' also stood for entente cordiale, Europe and entry into the Common Market.

Considering the complexity of the task of building ■ supersonic aircraft in one country and manufacturing parts in another, plus the many miles separating the two production centres, and the language barriers, the amount of international co-operation has been remarkable. My own hope is that this success will lead to many other ventures on a similar footing, as it is only by this means that the aircraft industry in this country can survive to produce both advanced military machines and the equally costly civil aircraft ventures that are in the project stage.

Tailpiece

A minor point that seems to have been missed by many people is the registration of the 001 Concorde. Resplendent on the fin and rudder was F-WTSS, the initials of SST in French. One wonders if the 002 prototype at Bristol will be G-ASST?

Above: *Martel air-to-ground missiles being carried by a Hawker Siddeley Buccaneer Mk 2. The Defence Estimates in February, 1967, announced that Buccaneers were being adapted to carry these new stand-off missiles. Martel—the name is derived from Missile Anti-Radar and TELevision—is a new generation air-to-ground precision tactical strike missile, jointly designed and manufactured by SA Engins Matra in France and Hawker Siddeley Dynamics Ltd.*

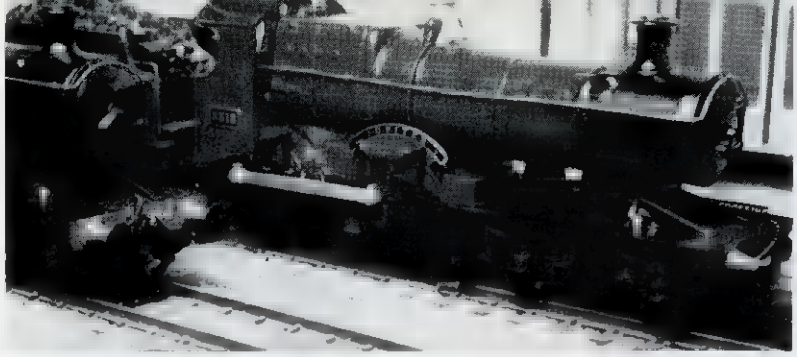
ARE YOU A KIT CONVERTER?

■■ have many letters from readers requesting back copies of AIRFIX MAGAZINE containing conversion articles. Back copies of some issues are still available for the benefit of readers who may have missed or mislaid earlier editions. For example, here are some of the practical articles which have appeared.

1965: September — Jeep conversions and Battle of Britain colour schemes. **1966: July** — RF-4C Phantom conversion. **September** — Matador variants. **October** — Spitfire trainer. **1967: May** — Crimean War and Do 217 conversions. **June** — Mosquito profile. **July** — Soviet missile tank. **August** — Early Churchills. **September** — Avro York and German half-tracks. **October** — Bus models in 4 mm scale. **November** — Japanese tankette and 'Daring' conversions. **December** — Halifax and RNAS Camel. **1968: January** — Tram model and M12.

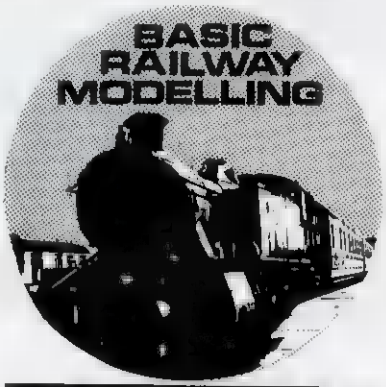
Would readers please note that all issues ■■ listed above are now out of print and can no longer be supplied.

Back copies cost ■■ each (including postage) for all copies ■■ to and including September, 1966. From October, 1966, onwards the cost is 2s 6d ■■ issue, post paid. Please address all requests for back copies, together with your remittance, to our circulation department ■■ SURRIDGE DAWSON ■■ CO (PRODUCTIONS) LTD, PUBLISHING DEPT, 26 ABERDOUR STREET, LONDON SE1.



Curved-frame 'Bulldog' 3313 Jupiter *is the latest conversion possibility from* City of Truro *to be covered by Norman Simmons. Compare with pictures of the straight-framed version in our December issue.*

'Curved Bulldog'



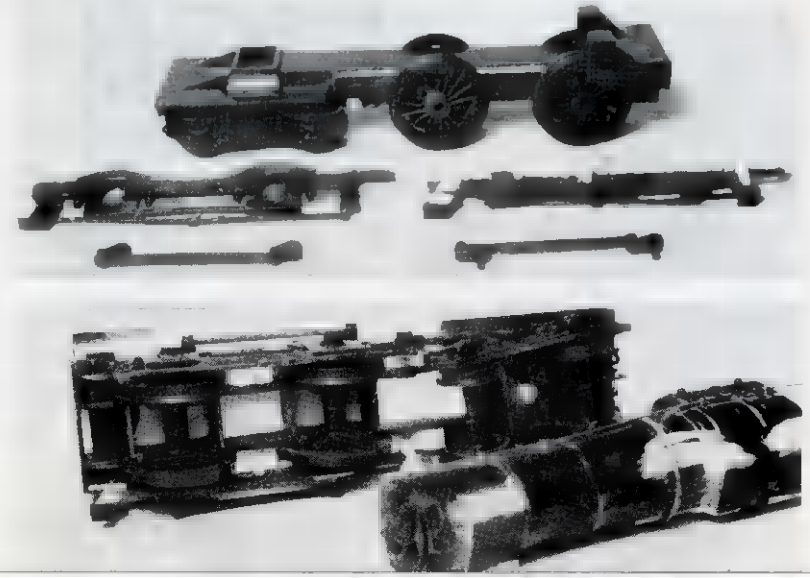
BY **NORMAN SIMMONS**

THE 'Bulldog' conversion in the December, 1967, AIRFIX magazine dealt with the most numerous members of the class, the earlier straight-framed version, numbers 3341 to 3440 inclusive. Mention was made of the 41 curved frame locomotives, numbers 3300 to 3340 but at the time the article was written I had not traced a source of readily available 4 mm scale engraved name and number-plates for any of these locomotives. I have since discovered that Eames of Reading include 3340 *Camel* in their list of plates. This is one of the oval cabside combined name and number-plates but unfortunately this locomotive was withdrawn as early as June, 1934. However, I have been able to obtain one of the Western Series of 4 mm scale engraved plates obtainable from James T. Fraser, 6 Seawall Cottages, Dawlish, Devon, and this is for No 3313 *Jupiter* which was one of the last of the curved frame locomotives to survive, not being withdrawn until April, 1946, so this is the locomotive I chose to model.

The only points of difference between this conversion and the one described in the December, 1967, issue arise from the use of curved frames instead of straight frames so in most things other than the frames I will refer readers to my earlier article. Fig 1 illustrates the shape of the curved frames as well as the general appearance of the locomotive. A pair of *City of Truro* mainframes were bolted together through the axle holes and carved and filed to the revised shape. Craft knife and half round needle file were the tools that were used. The footplate was modified by cutting away all of the raised part over the coupled wheels which includes the splashers and sandboxes, etc, forward and either side of the cab. Fig 2 will make this clear.

The coupled wheels came from the Prairie Tank kit and the December, 1967, issue should be referred to for the modifications that are required. I still had some spare *City of Truro* mainframes left over from previous conversions—the 26XX, 43XX and 93XX 2-6-0's and the County 4-4-0 conversions were all responsible for this—so I used these for the inside frames as described in the December, 1967, issue. One thing I neglected to mention in that article was the necessity to drill out the coupled wheel axle holes with a 13/64 inch drill to take the Prairie Tank coupled wheel axles. Drills of 13/64 inch are not the sort of size one normally finds in the average modellers' tool kit but some very comprehensive sets of twist drills, perfectly adequate for working in plastic, can be obtained from chain stores quite cheaply these days. My own 13-piece set covering the range $\frac{1}{16}$ inch to $\frac{1}{4}$ inch cost only a few shillings and from this set I was able to select a $\frac{3}{16}$ inch drill to make the first enlargement before finally using the 13/64 inch size. This way I was able to enlarge the axle holes by hand by just using the twist drills without any chuck, hand drill or other aid. In practice the tip of the drill was held against the axle hole and I found myself revolving the mainframe around the drill as much as I was twisting the drill itself. The inner mainframes were then assembled as described in the December issue. Don't worry if this is your first conversion and you haven't any spare *City of Truro* mainframes as it would be a simple matter to copy a pair using 30 thou plastic card and absolutely no detail is required.

The rear footsteps of numbers 3341 to 3360, as well as all the curved frame



Below: *The modified chassis with Prairie wheels fitted, and the outside frames and coupling rods ready for assembly.* **Bottom:** *Underside view shows how this model has inside frames to carry the driving wheels, referred to fully in December.*

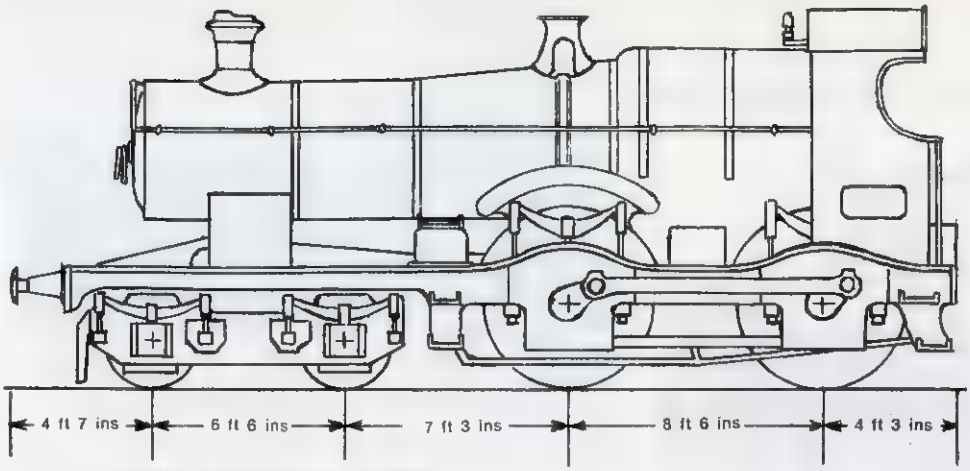


Fig 1. Curved frame 'Bulldog' Nos 3300-40
Scale 4 mm to 1 foot

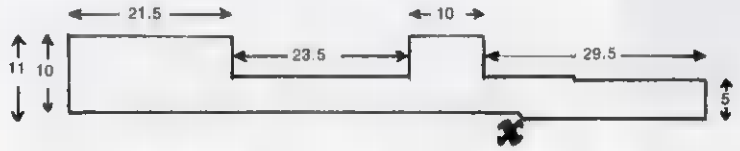


Fig 3. 'Bulldog' footplate – cut from 20 thou plastic card
Dimensions in millimetres

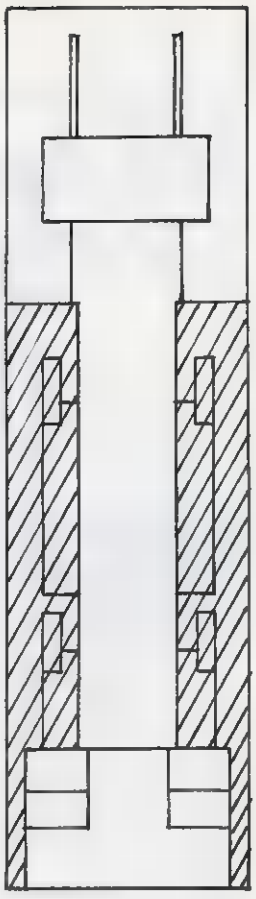


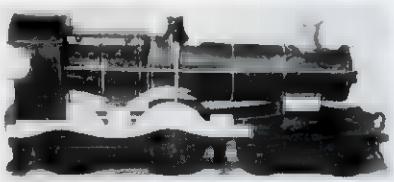
Fig 2. 'City of Truro' footplate – remove shaded area

locomotives, are swept backwards in a curve as shown in Fig 1. This is something else I didn't mention in my earlier article and should have done to 3341 *Blasius*, the subject of the December conversion. This curved shape is easily achieved simply by cutting off the footsteps at a point immediately above the middle step and transferring the right hand step to the left hand frame and vice-versa. A strip of plastic card cemented behind adds useful strength and support to the join and when the cement has dried the step can be carved and filed to shape.

The footplate was cut from 20 thou plastic card as shown at Fig 3. Use black plastic card in preference (if you can get it) as the edges of the footplate take most handling and paint can be easily worn away if white card painted black is used. I used white card just so that it would show in the photographs taken during construction and illustrate the construction features more clearly. The footplate should be curved to shape before cementing to the top edge of the mainframe. I also cemented small pieces of 60 thou plastic card under the flat parts of the footplate forward and between the coupled wheels to give added strength and support to the frames.

The fronts of the splashers were cut from discs of 30 thou plastic card and cemented behind the mainframes. Fig 1 will give the dimensions required for the splashers. At this stage the inner mainframe assembly can be cemented to the underside of the footplate. To bring the footplate up to the correct height I found it necessary to cement a strip of 30 thou plastic card between the footplate and the top edges of the mainframes. This applies equally to the straight frame version, but once again I must apologise for neglecting to mention this in the December issue.

The outside frames can now be put in place and the outside cranks and coupling rods assembled. Have a dummy dry run first, though, as upon completion of the chassis it will be noticed that the coupling rods at their maximum height rise above the top edge of the footplate. It is therefore essential to avoid any fouling or jamming at this point and if necessary the outside cranks should be packed up with washers placed over their 'D' shaped pins to ensure they extend far enough outside the frames to carry the coupling rods clear of the footplate edge. The small Peco insulated washers are a perfect fit and absolutely ideal for this purpose. Note that the rearward end of the footplate widens from point 'X' on Fig 3. If you have followed the dimensions and instructions accurately the coupling rod should just clear the footplate edge at this point.



The 'Bulldog' model complete and ready for painting. Plastic card parts are in white. Notice the sloping mainframes, from scrap plastic to match drawing, just behind the smokebox saddle.

The cab is the *City of Truro* cab with the sides extended at the base by strips of 30 thou plastic card and the spaces in the front filled in to suit the height of the smaller diameter coupled wheels. After assembly of the cab the splashers can be completed using strips of 10 thou plastic card for the tops. The outside springs need adapting to fit the revised frame shape and outside sandboxes are additional items, otherwise the rest of the locomotive, the boiler, bogie, and front buffer beam, etc, are as described in the December issue.

THE CHURCHILL TANK

by Peter Chamberlain

PART 8

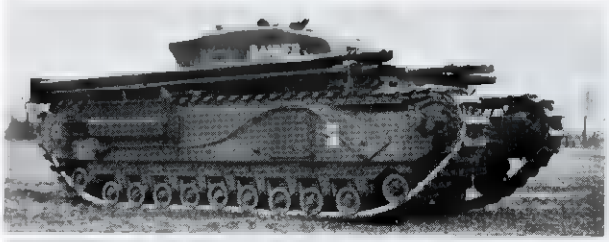
SPECIAL PURPOSE VARIANTS

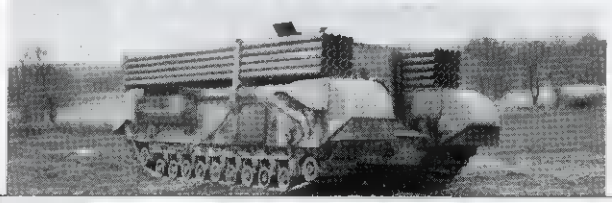
SOME of the explosive mine-clearing devices, such as the Conger and the Snake, were used with both the Sherman and the Churchill, though the method of fitting was generally different. The Churchill-fitted variants are described here.

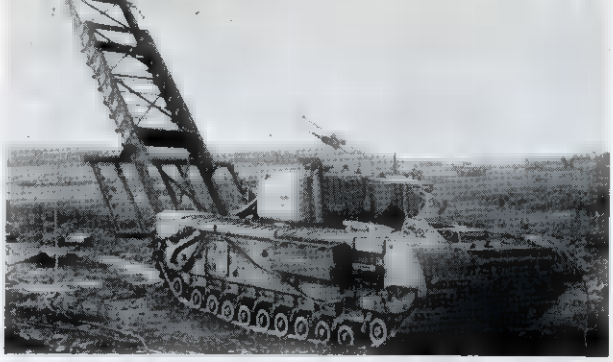
Elevatable Goat: This device was for use against high walls or obstacles and consisted of a long braced frame carried on the nose of the AVRE in a similar manner as the Assault SBG. Fitted under the two main spars were a series of linked charges. On approaching the obstacle the complete assembly was placed against the wall and jettisoned from the vehicle. The linked charges were next released and these fell away from the spars and lay across the wall. The tank then withdrew and the charges were blown.

AVRE with Conger 2 inch Mk 1: Evolved in January, 1944, for mine clearance in assault, this consisted of an engineless Bren carrier containing a 5 inch Rocket No 3 Mk I and projector, air bottles, and a tank of explosive. Fitted to the rear of the carrier was a wooden box containing 330 yards of 2 inch woven hose. The explosive carrier was towed to the edge of the mine-field and released. The empty hose was attached to the rocket and fired over the mine-field so that it lay extended across the field, one end still being connected to the carrier. The hose was then pumped full of explosive by compressed air. When sufficient explosive had been pumped into the hose, the carrier was removed and the hose was detonated by a delay pull igniter.

Below: *The Churchill with 3 inch Snake; vehicle is a Mk III.*
Bottom: *Churchill Gun Carrier (see part 2) adapted to carry Snake equipment.*







The Elevatable Goat was fitted to the AVRE in a similar way to the SBG bridge. It was mainly used for blowing high or thick walls (Imperial War Museum photos).

the blast creating a path through the mines. This saw limited operational use.

Churchill with 3 inch Snake: Developed in August, 1942, and used operationally, this device consisted of 20 ft lengths of 3 inch water piping filled with explosives, 16 lengths being carried on the Churchill. These were carried 8 per side over the tracks, being laid on short girder sections. The pipes were fitted together and pushed or pulled by the vehicle into the mine-field, released and then detonated, the blast creating a path approximately 21 ft wide. Maximum pushing length was 400 ft and for towing 1,200 ft. Extra explosive piping was carried by a 3-ton truck.

Churchill Gun Carrier with 3 inch Snake: This was an experiment to adapt the obsolete Gun Carrier as a carrier vehicle for Snake. The 3 inch gun was removed and 25 lengths of Snake were packed either side of the fixed turret, being retained in this position by two metal bars fitted either side of the vehicle. Used as described above.

Churchill with Giant Viper: This was a post-war version of the Conger. The explosive filled hose was loaded in a specially built trailer which also carried launching rockets for projecting the hose. The trailer was towed to the edge of the mine-field where the line charge was then launched across the field by the rocket towing unit. When the hose had reached the end of its launch it was lowered to the ground by parachutes where it was detonated. This device is still in use in conjunction with the present Centurion AVRE.

Churchill with Bangalore Torpedoes: This consisted of two lengths of Snake piping fitted to a Onion frame assembly. For use against light obstacles and barbed wire.

Churchill with Rocket Mine Clearance Device: This consisted of a number of 5 inch Rockets mounted on a light frame that was fitted at an angle on the nose of the Churchill. It was developed to investigate the possibility of clearing a lane through a minefield by means of air blast.

MISCELLANEOUS DEVICES

Churchill with Atherton Jack: This was a jib crane mounted on the turret, for handling tank engines.

Churchill with Transportable Derrick: This consisted of an electric powered jib fitted with two wheels and a detachable power unit. The assembly was towed behind the AVRE. When required the jib and its fixed wheels were mounted on the front of the vehicle, being connected to the existing fittings and the portable power unit was attached to the rear of the vehicle where it controlled the jib.

Whyman Mechanical Lane Marking Device: Evolved in 1944 for lane marking through mine-fields, it was fitted to Flail and AVRE tanks. It was also used for pegging down Bobbin Mats that had been laid down over poor ground. The device consisted of two banks of 12 firing tubes mounted

on each side at the rear of the tank. Each firing tube was fitted with a flagged picket, and at intervals a picket was fired into the ground by means of a ballistic cartridge. The 7 ft long picket penetrated 12 inches into the ground and remained upright to display the flag and so mark the path that had been cleared.

Churchill CDL: This was the Churchill with a specially designed armoured turret housing a searchlight (Canal Defence Light). It was originally planned to convert numbers of Churchill tanks to CDL vehicles but this was cancelled and the hulls that had been earmarked for this conversion were subsequently converted to Arks.

Churchill with Senior Equitine Cultivator: Experiments with a wheeled farm cultivator towed behind vehicle as a device to lift mines.

Churchill with Harrow: This was a similar device to the Senior Equitine Cultivator, consisting of a wheeled farm harrow towed behind a Churchill. Neither of these devices passed the experimental stage.

Churchill Pussyfoot: Modified engine and gearbox fitted to a rubber tyred Churchill, T32144, in 1942 in an attempt to give smoother running qualities. It was experimental only.

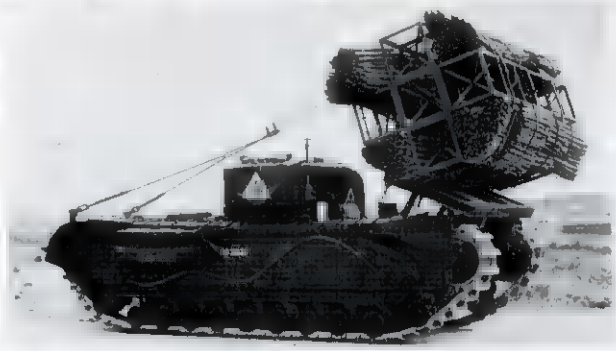
Churchill with Assault Sledges: This was an experimental project for transporting assault troops in armoured one-man sledges towed behind the Churchill in units of four. A similar idea was tried with the Sherman.

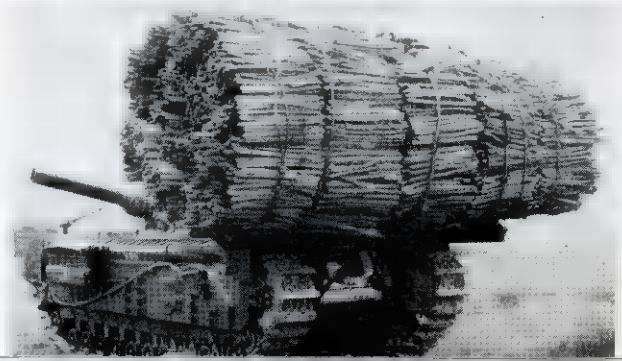
Churchill RYPA: This was a Mk VII chassis fitted with an oscillating gun-platform for training gun crews.

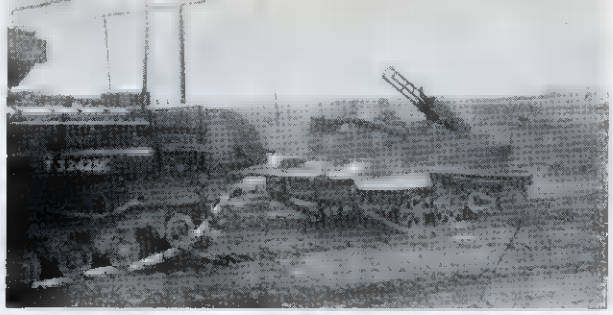
Churchill with Centipede Rollers: Evolved in 1943 for the clearance of small anti-personnel mines, the Centipede rollers consisted of 12 small rollers on parallel bars towed behind the Churchill.

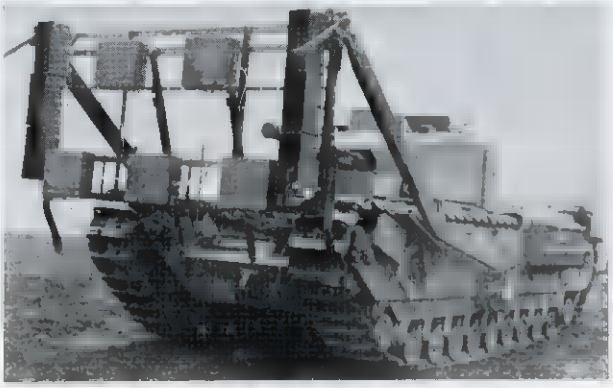
Churchill APC (FV 3904): This was a post-war expedient to provide an armoured personnel carrier using an adapted Churchill Mk VII. Turret was removed and interior fitted out to transport a section of infantry with full equipment.

Below: *A Petard-armed AVRE in post-war service with steel fascine cradle of similar pattern to the wooden ones used with the original AVREs. Basic vehicle is a Mk IV with addition of a cupola.* **Bottom:** *AVRE Mk VII with the later wide fascine cradle and 165 mm demolition gun. Note side fittings on both vehicles for dozer blades, CIRD, etc.*









Top: *Basic element of the Conger was an engineless carrier towed behind an AVRE.* **Above:** *The Onion described last month.*

Wireless equipment was installed and hull machine gun retained. Some turretless Churchills of earlier marks were used in 1944 as troop carriers.

Churchill with Deep Wading Equipment: An early version of this equipment was first tried at Dieppe on the Churchills that came ashore from the LCTs. This was vastly improved on during the course of the war and came in kit form to provide trunking for radiator grilles and seal all hull orifices.

Churchill BARV (Post-War): This was a Churchill Mk II with turret removed and replaced with a large cylindrical superstructure over the turret ring to facilitate deep wading and consequent recovery of vehicles from beaches. Converted by the Royal Engineers, it was a prototype only, 1954-56.

AVRE VII (FV 3903): A post-war version of the wartime AVRE, this was the standard Churchill Mk VII fitted with a modified turret mounting a 165 mm (6.5 inch) Ordnance BL Mk I low velocity gun, to replace the obsolete Petard type. The fully rotating power-operated turret also mounted 12 smoke discharger cups fitted to the turret sides. Gunnery control was the same as in a gun tank. 31 rounds were carried. This was the last variant of Churchill to remain in front-line service with the British army, being replaced by the Centurion AVRE in 1965.

AVRE Mk VII Dozer-Blade: The Churchill AVRE Dozer-Blade Equipment consisted of a hydraulically operated dozer blade, 11 ft 5 inches wide and 3 ft 2 inches deep with the necessary parts to convert the AVRE for bulldozing. Positioning of the blade was controlled from inside the driving compartment permitting close-support dozing tasks to be carried out while the crew were under the protection of heavy armour. This equipment was also fitted to some Petard-armed AVREs in post-war years.

AVRE Mk VII Fascine: For the purpose of carrying fascines (brushwood bundles) for use in the crossing of ditches and wide trench works, a collapsible fascine cradle was fitted on the front of the vehicle. The fascine cradle could mount a fascine 8 ft in diameter, 13 ft long and up to 10 tons in weight.

SIX WHEELER
4MM SCALE

A MATADOR CONVERSION

by
michael andress

WHILE looking through some of the many bits and pieces left over from my earlier conversions, I thought that a six-wheeled lorry would make a change from articulateds. I chose a sided lorry of the type used by many construction and demolition firms, but you could easily build a flat deck or a van body on the same chassis.

This uses a complete Matador kit plus a few extra pieces. If you haven't any left overs you can either buy a second kit (which will remedy your present lack of pieces for future projects) or you can make the extra pieces needed from plastic card, dowel, etc.

As usual I began the modifications with the chassis. This must be lengthened to accommodate the extra axle and wheels. Fig 1 shows the kit chassis (part 15) in its original form, with the parts to be removed shown in dotted lines, while Fig 2 shows the altered chassis. Cut off the front and rear towing hooks and bars and also the winch drum and its axle. I moved the petrol tank further back by cutting through the two supports where they join the main chassis girder and re-attaching them in the new position. This is optional though, and as it does mean an alteration to the exhaust system (parts 46 and 47) you may prefer to leave the tank in its original position.

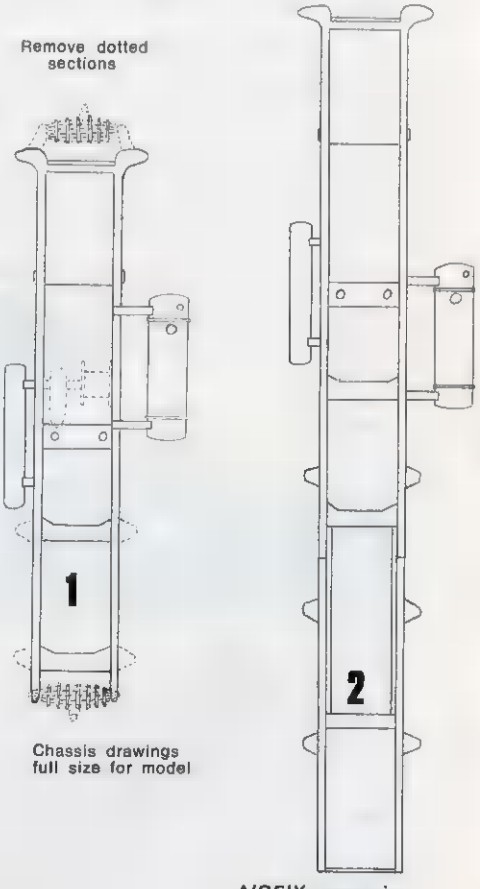
Cut off the front and rear supports for the rear springs. Try to do this neatly so that the supports are left more or less intact and can be re-attached after the chassis has been lengthened. Cut two strips of 0.08 inch thick plastic card 2 mm wide and 41 mm long (or two layers of 0.04 inch thick material) and glue these to the ends of the chassis girders. Cement another strip of 0.04 inch plastic on the inner side of each join to strengthen it. Two cross pieces of 0.04 inch plastic sheet, 2 mm wide and 9 mm long, fit between the girder extensions in the positions shown in Fig 2 to complete the chassis frame.

Glue the front springs (parts 35 and 36) and the gearbox (part 41) in position followed by the front axle (part 44). Now re-affix the four spring supports which were removed earlier together with two more cut from scrap plastic in the positions shown in Fig. 2, and glue the four rear springs in place (two of each of parts 37 and 38), followed by the two rear axles (two of part 43). If you are using only one kit, make the two extra springs from card and the extra axle from wood dowel; these parts will be hardly visible in the finished model and so need not be well detailed. At this stage slip the six kit wheels on to the ends of the three axles and before the cement sets, holding the four rear springs and their supports firmly in position, adjust these parts so all the wheels touch the ground at once and the chassis is level.

I built up the main drive shaft using some of the kit parts. I took part 45 (the front transmission), cut off the flange which is intended to fit into the slot in the front axle and then hollowed out the remaining surface a little so it would fit snugly on to the differential of the leading rear axle. There was a gap of about 6 mm between the rear end of the gearbox shaft (part 41) and the front end of part 45. I filled this with a length cut from a used Biro refill and cut the rear end off part 42 leaving a shaft long enough to fit neatly between the differential housings of the two rear axles.

The silencer/exhaust outlet (part 47) can be fitted at this stage, fixing it to the chassis frame by two pieces of scrap plastic so that its front end is 3 mm behind the back support of the front spring. Part 46 cannot be fitted until the cab is built up and fixed to the chassis.

The kit wheels must be reduced in thickness to 3 mm and in diameter to 12.5 mm. I have previously used the method described by Norman Simmons (October, 1966, AIRFIX magazine) to do this but have found it rather slow. On this occasion I saved some time by a modification of the method. I began by filing the rear surface of each wheel down until it was flush with the recessed centre part, while the wheel was held firmly in a vice. Each wheel was then 3 mm thick. Next I mounted them in pairs, back to back, on 10 BA bolts and used a hand drill as a makeshift lathe, as in the original method, but I did the initial taking down with a hacksaw blade held on the wheels as they were rotated. This does not give as smooth a finish as with a chisel but I find it takes the plastic off much more quickly and I use a chisel and file for the final finishing to give just as good a final wheel. I made the four inner wheels from a $\frac{1}{2}$ inch diameter rod of hard rubber or similar material which I happened to have on hand, but a wood dowel or other material of suitable size would probably be just as good. Cut off four discs 3 mm in thickness. Drill a hole centrally by holding each in turn behind one of the turned down kit wheels and using the centre hole of this wheel as a guide. Then drill part way through, using increasing drill sizes until you reach $\frac{1}{4}$ inch diameter. This will allow the wheels



Chassis drawings full size for model

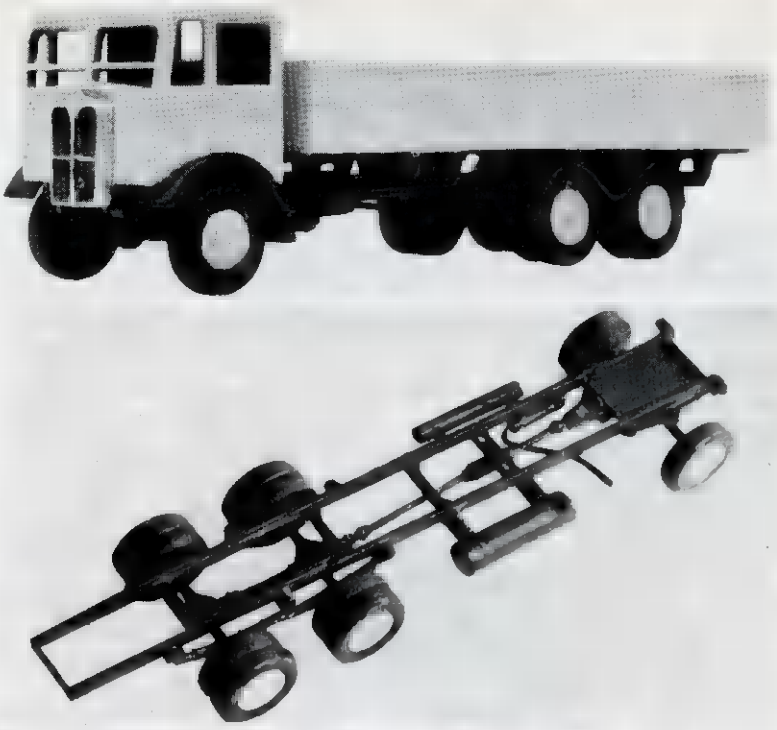
to sit neatly over the brake drums on the rear axles.

Fix the rear wheels on to their axles in pairs (one kit wheel and one home-made wheel) back to back with the kit wheel as the outer one and cement the hubs in place. Increase the track of the front wheels by gluing a disc of thin card behind each front wheel and drilling out the central hole. Fill in the recess in each front wheel with plastic wood shaped to form the typical domed hub and complete the wheels with a 10 BA washer glued to each hub to represent the projecting flange.

The cab differs in only two ways from the kit cab. Cut out the window in the cab back (part 1) using the square impression already present as a guide. The easiest way is to drill out the centre and then cut out the corners with a sharp modelling knife. Finish with a small file to give a neat window opening. The other modification is the replacement of the kit cab roof (part 14) by a flat roof of card or plastic card trimmed accurately to shape after being glued in position. Don't forget to paint the cab interior and to add windows of transparent material (if you wish to glaze the windows) before you assemble the cab.

The body is shown in Fig 3. It is based on two body floors (parts 17) but if you are using only one kit (and have no left over parts from previous conversions) it can be built from a single part 17 extended with plastic card. The extra cross braces then needed can also be made from card using those on part 17 as a guide.

I cut off and discarded the rear 18 mm from one floor and then joined the remaining part of this floor by its front edge to the rear edge of the other floor, after filing the two edges so they will fit neatly. Cutting away the middle part of the cross brace adjacent to the joint allows a strengthening strip of scrap plastic to be fixed across the undersurface of the joint.



Top: *Completed version, though freelance, has a very close resemblance to the AEC Mammoth of twenty years ago.* **Above:** *The completed chassis showing twin wheels at rear.*

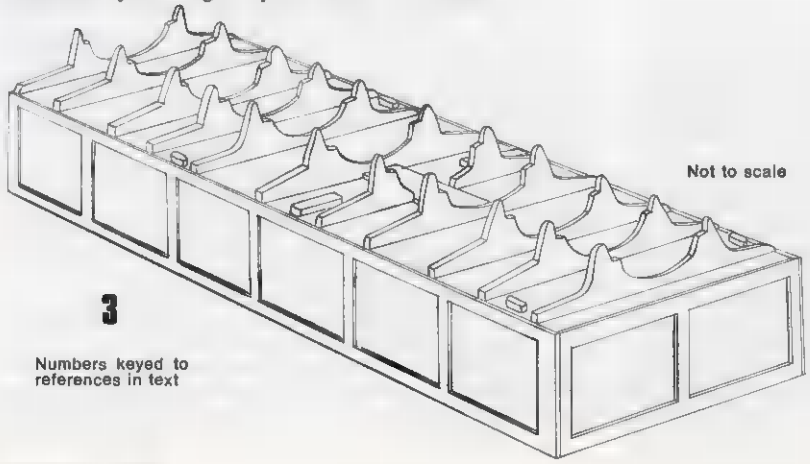
Each side and end is cut from 0.04 inch plastic sheet with a facing of 0.01 inch card. Cut these facings out with a sharp modelling knife and handle them carefully as they are rather flimsy until they are cemented to the thicker backing pieces.

The rear mudguards could be made from card bent to shape and hardened by painting with shellac. Alternatively mould them from plastic sheet in boiling water as described in my July article.

The cab can now be fixed to the chassis. Part 46 is shortened to fit between the cab floor and part 47 and glued in position. To fit the body neatly to the chassis it may be necessary to trim some of the cross braces beneath the floor with a file or knife so that they clear the vacuum tank, and the supports for the petrol tank and rear springs.

Headlamps can be made from 1/32 inch thick slices of 3/32 inch wood dowel painted silver and cemented in the appropriate positions on the cab front.

Painting is best carried out during, rather than after, assembly. The colour scheme is up to you. My choice was matt black for the chassis and other underparts, mudguards and tyres; yellow for the cab, body sides and hubs; and silver for the chrome trim of the headlamps and radiator.



NEW CATALOGUES

BMW Models Ltd, 329 Haydons Road, London, SW19, have sent us a copy of their comprehensive model railway catalogue, 1968 edition, which lists and illustrates just about everything currently available in N, TT, H0, and 00 gauges, plus trackage, station and building kits, and components. Model railway enthusiasts will find it a useful buy at 2s 6d. Everything listed is available either to callers at the shop or by mail order. BMW have, incidentally, just opened additional premises to cater specifically for their mail order business.

Bellona have taken over the Warpics photo-library of tank and military pictures and have issued a new catalogue, due for gradual expansion, which fits inside the Bellona binder for ease of filing. The catalogue costs 6d from Bellona Warpics, PO Box 1, Wargrave, Berks.

NEW BOOKS
REVIEWED FOR MODELLERS

For shipping fans

SHIPS 'SIXTY EIGHT, *edited by W. Paul Clegg. Price 12s 6d.*
COASTAL SHIPS, *by D. Ridley Chesterton. Price 25s. Both published by Ian Allan Ltd, Terminal House, Shepperton, Middx.*

LIKE the train and bus annuals from Ian Allan reviewed in December, *Ships 'Sixty Eight* is an old favourite renamed. Despite this it remains largely a nostalgist's delight with articles and plenty of big pictures on the Blue Riband, Thames sailing barges, tugs, ships on the India run, historic houseflags, paddle steamers, steamers of the Western Isles, and lifeboats. The modern scene is covered with features on container ships and the Yarrow 'utility' frigate. At its modest price this is an interesting buy for the younger shipping enthusiasts.

Coastal Ships is uniform with previous Ian Allan volumes dealing with warships and the like. It lists all coastal shipping over 200 grt running under British and Irish registration and therefore likely to be seen in most British ports and harbours. Each line is dealt with in alphabetical order with brief details of colour schemes and houseflags, plus tabulated data on the ships concerned. A further section deals with European coastal ships, and the remainder of the book deals with tugs. Numerous pictures make this a further essential reference book for shipping enthusiasts; in fact the vessels covered in this book are more likely to be seen by the average Britisher than any others.

Self-propelled guns

STURMARTILLERIE, *by W. J. Spielburger and Uwe Feist. Published by Aero Publishers Inc, Fallbrook, Calif, and distributed overseas by W. E. Hersant Ltd, 228 Archway Road, Highgate, London, N6. Price 23s 6d, including postage.*
SELF-PROPELLED WEAPONS OF THE GERMAN ARMY, PART 1, *by P. Chamberlain and H. L. Doyle. Published by Bellona Publications, Hawthorn Hill, Bracknell, Berks. Price 8s 6d, including postage.*

THESE two books deal with basically the same subject, though they do not overlap much, mainly because German self-propelled artillery of 1939-45 was so prolific that no single book could cover the many types produced. *Sturmartillerie*, sub-titled *Self-propelled guns and Flak tanks*, continues from the previous Aero book on assault guns and deals with the more extemporised equipment used by the Germans. These were either captured foreign chassis or obsolescent German-built chassis—such as the Pz I or II—fitted with either a German or a captured gun. Thus the Wespe, Nashorn, Marder, and Hummel types are covered, together with the various Waffentragers and Flak types like the Wirbelwind and Grille. Apart from scores of big pictures —many of them quite rare—the more important types are also illustrated with side elevation drawings and specification tables. A colour section in the middle of the book gives some typical vehicles in action scenes, showing various camouflage schemes.

The new Bellona book, by authors well-known to AIRFIX magazine readers, is the first in a series which is intended to cover all the self-propelled weapons of the German army. Part 1 deals with weapons on German-built full-tracked chassis, and has a picture for every type plus a specification. Many of these are rare shots, and at its low price the book will be a useful reference for all military vehicle fans. Another Bellona venture is wargamers' or military enthusiasts' notepaper which has a decorative heading depicting tanks and troops in action. This comes by post only at 6s 3d (postage included) for four dozen sheets.

Arms old and new

LEWIS AUTOMATIC MACHINE GUN. *Published by L. A. Funk. Price 11s plus 6d postage.*
SWORDS AND DAGGERS, *by Frederick Wilkinson. Published by Ward Lock & Co Ltd. Price 35s. Both available from Ken Trotman (Arms Books), 3 Ash Close, Naphill, High Wycombe, Bucks.*

OF special interest to gun enthusiasts, the Lewis book is, in fact, an exact facsimile reprint of the original maker's handbook on this famous weapon put out in 1916 by the Savage Arms Co of New York. Apart from being a completely detailed manual on all aspects of the Lewis, therefore, the book has a delightful period charm complete with Savage Arms Co adverts of the time. There are numerous illustrations and a fold-out cut-away drawing of the British version of the gun. An interesting feature is the inclusion of several pictures showing the various aircraft and military mountings for the weapon. These show everything from the gun being fired by American troops from the crook of a tree to British motor-cycle and armoured car mounts.

Swords and Daggers is a beautifully produced and profusely illustrated book dealing with the development and collecting of edged weapons, both European and oriental. There are about 200 excellent pictures and detail drawings, plus a vast amount of information. For anyone who wants a good informative book on the subject, this one is hard to beat.

Old-timers listed

VETERAN AND VINTAGE AIRCRAFT, *by Leslie Hunt. Published by the author and distributed by Beaumont Aviation Literature, 11 Bath Street, London, EC1. Price 25s, plus 1s 6d postage.*

TWO years ago the author of this book published a first edition in pocket book form which was so successful that it was completely sold out long before we had a chance to review it. This has led to a new and much larger edition in bound form, running to 160 pages with more than 500 pictures, colour covers, and details of 3,350 preserved historic aircraft covering 1,025 types in 66 countries. The entries are alphabetical for easy reference so that any aviation enthusiast owning this book can look up any district he happens to be travelling in and see if there are any preserved aircraft on show locally. Serials, codes, squadron service, etc, as appropriate is given for each aircraft listed. A preview of some of the pictures appeared in AIRFIX magazine's Photopage during last year. Highly commended.

British bombers

THE BRITISH BOMBER SINCE 1914, *by Peter Lewis. Published by Putnam & Co, 9 Bow Street, London, WC2. Price 63s.*

ANOTHER in the excellent Putnam series of aviation books, this is a companion volume to a similar publication on British fighters. It follows the now familiar Putnam

Continued on page 227

DH9 from an Airfix DH4

BY ALAN W. HALL

RELEASE of the DH4 kit in the Airfix range has come as a boon to the modeller interested in World War I and the inter-war years. Not only does it provide a very neat Scarf ring mounting and Lewis gun but the four-bladed propeller, undercarriage, and main planes will be useful for adaptation into a number of other aircraft models.

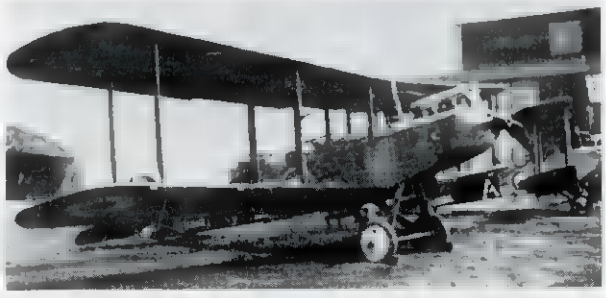
The direct descendants of the DH4—the DH9 and the DH9A—can be made from modifying the original. Both are quite different in their approach, particularly the latter, and therefore make ideal subjects for my next two conversion articles.

The DH9, the aircraft to be dealt with first, was intended to replace the DH4 in service. Unfortunately, the 230 hp Puma engine which was installed did not give a great advantage over the DH4 unit and therefore, although the aircraft was used in considerable numbers, it never achieved the popularity of the DH4 or the later derivative the 9A.

Making an in-line engine can be a fascinating job. To copy the Puma power unit fitted to this aircraft required a great deal of study from photographs before the reduction in scale and detail could be achieved without the loss of character. In the end I found the whole thing could be built from scrap plastic without the use of a lathe or other complicated tool.

Apart from a study of manufacturer's photographs of engine installations, I found valuable reference in *Reconnaissance and Bomber Aircraft of the 1914-1918 War* published by Harleyford. This provided the basis for the drawings and also gave a direct comparison between the DH4 and DH9 plans. An interesting account of the many other variants of both aircraft can be found in Jackson's *De Havilland Aircraft* published by Putnam, and further colour schemes can be found in Aircraft Profile 62.

The work involved in modifying the DH4 into a DH9 consists of an entire new nose forward of the gunner's cockpit, a new undercarriage and, of course, rigging. In all it is a fairly easy job once the engine part has been accomplished.



Above: *Michael Beckett sent us this picture of Cubitt-built DH9s of an unidentified unit in 1918. Further machine is D569: A. Note starboard cowling exhaust ports.*

Above: *Fine view of an Airco-built DH9, E619, of 98 Sqn, photographed on August 20, 1918. Picture submitted by Peter Simpson and taken by his grandfather, Lieut G. Banham. Pilot posing with the aircraft is Lieut Lawson. Reason for the US marking on the cowling is obscure—can anyone enlighten us?*

STAGE 1 Glue both fuselage halves together and set aside to dry. Cut off the forward part of the fuselage at a line directly in front of the gunner's cockpit. Stick in place a balsa wood plug 2⅜ inches long by ½ inch wide and ¼ inch deep. Leave several days to dry thoroughly.

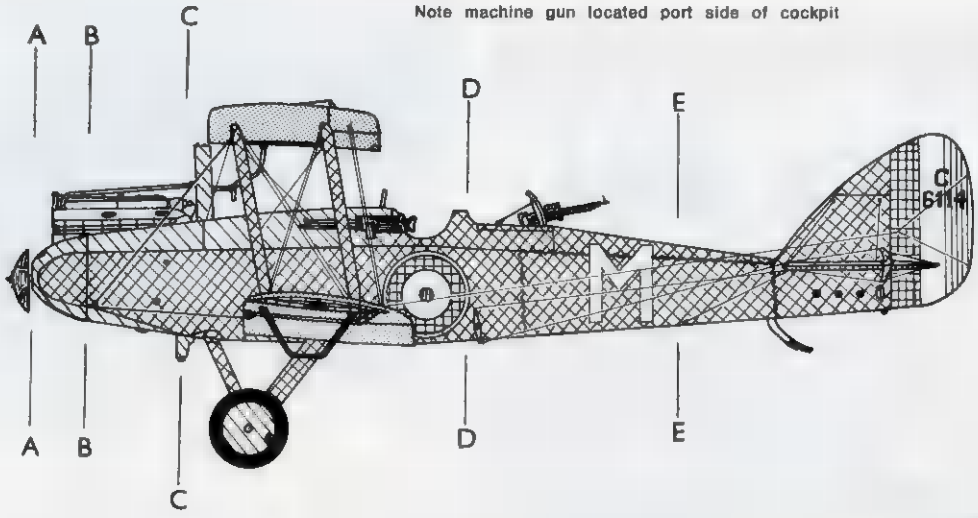
STAGE 2 Trace the shape of the new nose section on to the balsa wood plug in side and plan elevations and carve the new fuselage section by taking a frequent look at the cross sections shown in the plan. The new pilot's cockpit is made by drilling a hole in the balsa and enlarging this to the shape required by careful use of a round file and sandpaper. Complete the operation by giving the new nose a liberal coating of talcum powder and clear dope filler, and sanding down to a fine finish

STAGE 3 Cut a wedge-shape slot into the nose, ⅛ inch wide, to accommodate the engine. Paint this with the filling mixture and sand down later after the mixture has dried.

STAGE 4 Making the engine. The basic construction comes from six pieces of plastic sprue of the correct cross section, ie, circular and about ⅛ inch in diameter and 3/16 inch deep. Glue these together to form the cylinder block. The cylinder head came from square cross-section scrap plastic. Plastic card will do for this job, however, if no other more convenient material is available. The square section, 11/16 inch long has its corners rounded and is stuck on top of the cylinders. Next comes the exhaust system. This was made from stretching sprue over a candle flame until the right diameter of rod is obtained and then cutting and fitting this into position. Six small pieces, less, than 1/16 inch long, are stuck to the port side of the cylinders. Another piece of the same section for the first ⅛ inch of the length of the engine is also stuck on, but this has its rear end turned downwards and is thicker than the forward part. The vertical radiator is made from plastic card and the fuel lines from finely stretched sprue. Complete the work by installing the engine in the fuselage wedge-shaped slot.

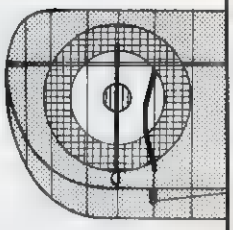
Scale drawings on next page
Construction notes continued on page 226

Note machine gun located port side of cockpit



Construction
for engine a
page

Two-blade Airco airscrew (varnished wood)



Note : White outline to upper wing and fuselage roundels

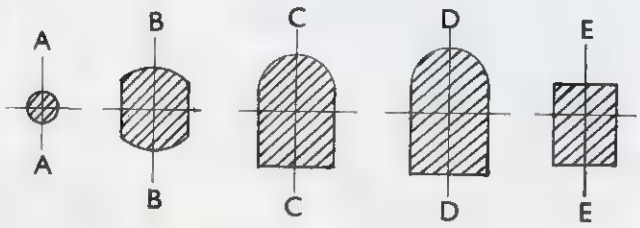
Build Armstrong Siddeley Puma engine from scrap plastic as described.
Colour : Bronze with silver and black detail.

Follow kit instructions for

Havilland DH9 of 49 Sqn, RFC, 1918

al drawing
ssembly on
226

Fuselage cross-sections

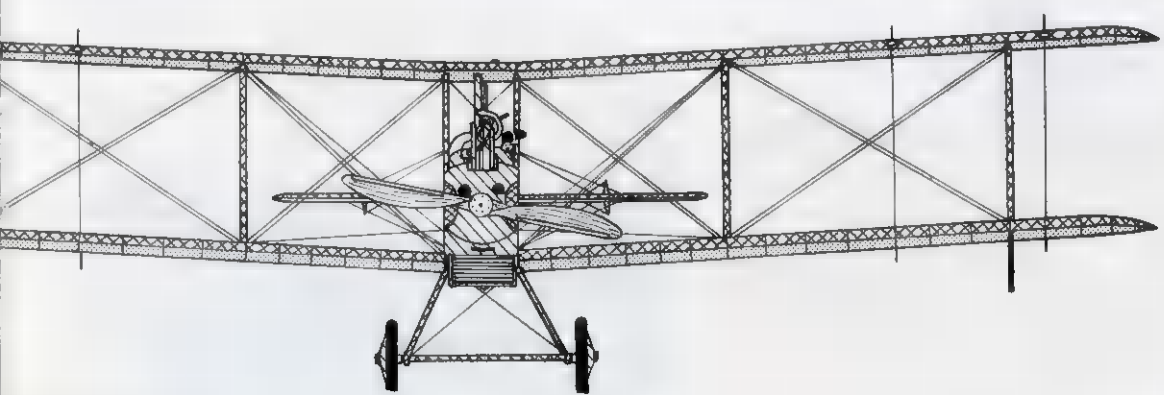


Rigging and control wires made from polystyrene sprue stretched out very fine over candle flame

Drawings by Richard L. Ward

0 10 feet

1:72 scale

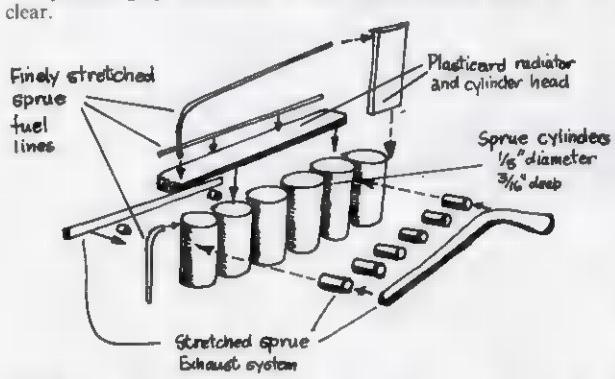


wing and tail assembly

Dimensions : (DH9 with Puma engine)
Span : 42 ft 4½ inches
Length : 30 ft 6 inches
Height : 11 ft 2 inches

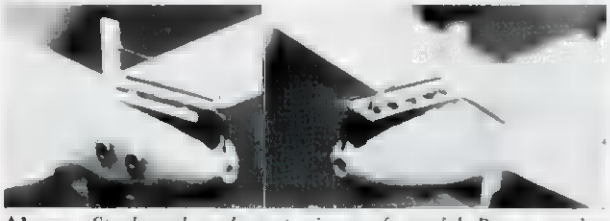
DH9—from page 223

I made the various components from either silver or black sprue. The result—with black cylinders and fuel lines and silver cylinder head and exhaust system—looked very realistic. The radiator was painted grey. Reference to the sketch should make all this clear.



STAGE 5 The undercarriage legs are made from plastic card as those in the kit are too short and stubby. The dimensions were transferred from the plans to a thick sheet of plastic card by dividers and the shape drawn in before cutting out with a sharp knife. After drilling the axle holes with the correct diameter drill the undercarriage was assembled and allowed to dry. Cut pegs into the fuselage ends of the legs and let these into existing locating holes (for the rear) or new holes cut in the fuselage sides.

STAGE 6 Fuselage radiator, air intake, and starboard fuselage exhaust ports. All of these are made from scrap balsa and plastic. The former was made from plastic card with the lines of the radiator grille scribed into a sheet of fairly thick material with a nail filed to a sharp point. Assembly of the rest of the radiator was made from thin card with the corners filled and sanded down. The air intake was simply a small piece of balsa cut to a wedge shape with the intake filed out before sticking to the fuselage. When dry, the exterior shape of the radiator was sanded down to shape. Finally the exhaust ports were made from sprue that had been drilled down its cross-section and cut at an angle. The starboard fuselage drawing on the front page of Profile 62 gives an idea of what this looks like.

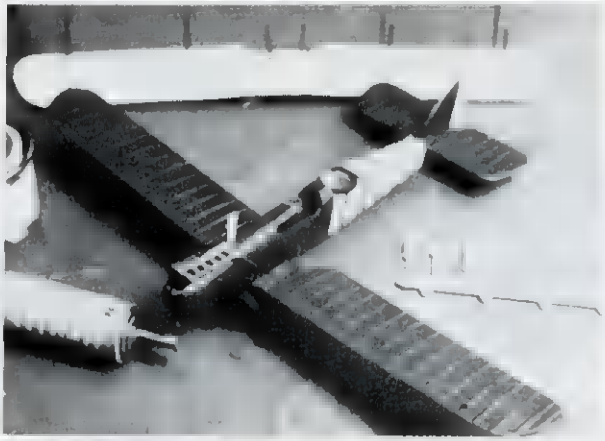


Above: *Starboard and port views of model Puma engine made as described above. Note exhaust ports on starboard side.* **Right:** *Completed model painted as the colourful B7620: A.*

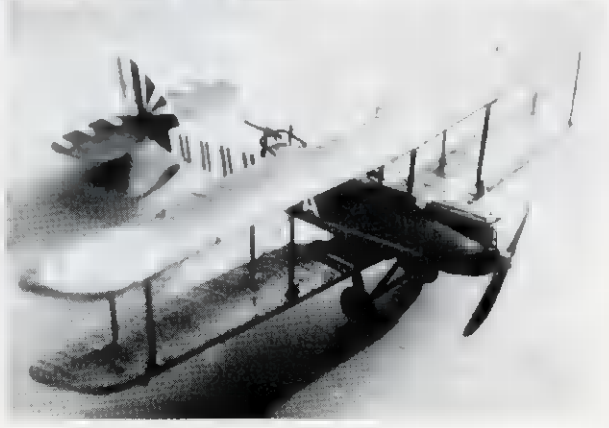
STAGE 7 It is impossible to use the DH4 kit propellor because even with two blades removed the remaining two are canted in the wrong direction. I discovered after an exhaustive search that the only generally available prop anywhere near suitable is that on the Revell Camel. The only alternative is to hand carve one from balsa.

STAGE 8 The tail unit is assembled while other sections are drying out. It is important to remember that *the wings are not completed until after painting.* This is due to the complexities of the guns and cockpit, plus the convenience of not having the top wing in place when painting the fuselage.

PAINTING I chose as the subject for my model the drawing of B7620 which appears on the inside cover of the DH9 Profile because this presents a pleasant challenge in fuselage decoration. Readers will see from the photographs that the green stripes on a white ground were applied before the wings were put in place. The white ground was painted first and the green was painted on spare strips of transfer slide which appear on most sheets not having individual slides for each subject. When dry this can be cut up and stuck in place like ordinary transfer. Tail unit markings and the national colours on the tail (notice that these are reversed blue, white, red from later practice) are all hand-painted. The fuselage letter 'A' comes from a Yeoman sheet. Under and top wing markings come from the DH4 kit. Our drawing gives a simpler colour scheme, however.



STAGE 9 The final operation is to stick the top wings with the interplane struts in place on to the lower wings, followed by the rigging. The drawings will give an accurate guide to where the rigging wires go and they are not too complicated. To make them, get a length of silver sprue and stretch it over the heat of a candle. I find that two pulls are necessary to get the necessary fine section, first, almost immediately after removal from the flame and then another a few seconds later. Each individual wire is measured off from the model with a pair of dividers. The required length is cut from the stretched sprue and is put in place by tweezers. Two tiny drops of polystyrene cement are put in the exact place needed by the tip of a cocktail stick before offering up the individual wire. Touching up with the base colour is sometimes needed after this and should be done with great care. This method of using finely stretched sprue for rigging is most effective but an alternative, of course, is to use 'invisible' nylon thread.



New Books—from page 222

format with numerous good pictures, small but adequate scale drawings, and an informative and detailed text. A listing at the end gives brief data on all types covered in the main body of the book. Emphasis is on design and development and the story is taken chronologically dealing with both RAF and FAA bomber types. We found the early history particularly absorbing, but the book goes right up to the TSR-2, offering so much information that the price of three guineas is modest by comparison.

Israeli-Arab war

THE LIGHTNING WAR, *by W. Byford-Jones. Published by Robert Hale Ltd, 63 Old Brompton Road, London, SW7. Price 30s.*

NUMEROUS books are appearing on the amazingly swift Israeli-Arab conflict of June, 1967, and this one we found to be among the best from the military enthusiast's point of view. Apart from giving a complete and detailed account of the political events preceding the war, the actual course of the campaign, and the aftermath, this one gives some good background material on the equipment used by both sides, morale, the troops, supply problems, and individual actions. The author was in Israel throughout the war, so uses some of his own experiences to add colour to the narrative. There are numerous maps and pictures, some of which appear to have been taken by the author himself. We would have liked to see some of the equipment identified in the pictures and Centurion is inexplicably misspelt throughout, but these points apart the account is very readable and interesting.

Useful references

VTOL AIRCRAFT AND HELICOPTERS, *by J. W. R. Taylor. Price 12s 6d.*

WORLD'S AIR FLEETS, *by David Wragg. Price 17s 6d. Both published by Ian Allan Ltd, Terminal House, Shepperton, Middx.*

IN the now-familiar Ian Allan format, these are two more useful reference books for the aviation enthusiast. John Taylor's book follows the usual 'ABC' style, presenting all helicopter, autogyro, and VTOL designs currently flying with pictures, data, and brief histories, covered alphabetically by manufacturers. *World's Air Fleets* deals, also alphabetically, with airlines, giving fleet histories, colour schemes, fleet lists and registrations, routes, and pictures of representative aircraft types. In short, an excellent and interesting little book.

Ninth Air Force

THE 9TH AIR FORCE IN WORLD WAR II, *by Kenn C. Rust. Published by Aero Publishers and distributed overseas by W. E. Hersant Ltd, 228 Archway Road, London, N6. Price 84s.*

THE story of the 9th United States Air Force began in the Western Desert in 1942. In the months that followed the 9th grew from a handful of aircraft and men to a mighty bomber and fighter force which swept the Axis forces back into Europe and up the narrow leg of Italy. The famous Ploesti raid on the Rumanian airfields was mounted by the Liberators of the 9th Air Force.

Reborn in England, the tactical knowledge of the 9th was joined with the strategic experience of the 8th Air Force to provide the vast armada of aircraft that fought its way into France through the Overlord beachheads and into Germany itself.

Reproduced above is one of a set of very fine quality prints of five classic cars being published by Concours Prints, PO Box 217, Orchard Lake, Michigan 48033, USA. Others in the series are the Ausro-Daimler Prince Henry, Hispano-Suiza T15 Alfonso XIII, Mercedes SSKL, and Vauxhall 30/98. The prints measure 14 inches × 11 inches and are printed on heavy art paper suitable for framing. Price of the complete set is $5, or $1.25 for single prints. This includes postage in a cardboard tube. Our reduction doesn't do justice to the original due to loss of detail in so small a size.

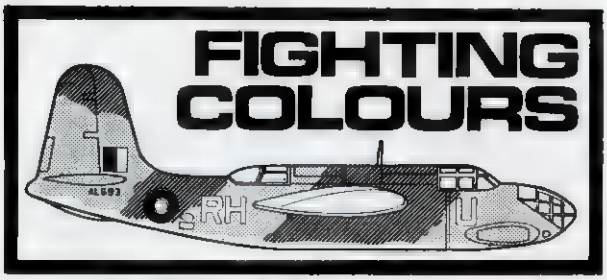
This book is an accurate story of the thousands of operational sorties made by American aircrew during the war. It tells in hitherto unrevealed detail much of what went on behind the scenes at Air Force Headquarters and also what happened in the air and on the flight line.

The author, Kenn Rust, has spent the last three years on research for this book and the effort has obviously been worth while. He has had many collaborators, both in the service and out, who have supplied many of the photographs which have untold historic value. Research has also been done on the markings of fighters, bombers and transport aircraft used by the 9th and this alone will make the book of value to present-day students of USAF history.

In brief

USEFUL publication from Hobbies Ltd is *Hobbies Annual 1968*, which is excellent value for the modeller at only 5s. Well printed and produced, it is essentially a giant catalogue of hobby and modelling equipment, covering tools, paints, glowplug engines, boat kits, 'do-it-yourself' dinghy kits (full-size ones!), chemistry sets, radio-control equipment, flying aircraft models, slot racing cars, and a selection of plastic kits, plus many more items.

Latest edition of *The Observer's Book of Automobiles* (Frederick Warne, 6s) by L. A. Manwaring, gives the customary coverage of the latest products from the world's motor manufacturers complete with pictures and specifications. A must for car fans, this. Another publication of interest to car fans—especially modellers—is *Model Car Collector*, a bi-monthly at present, which is available at 5s per issue from Anstey Models Ltd, 1 The Green, Anstey, Leicester. This magazine, duplicated at present, contains articles devoted entirely to collecting die-cast model cars. Another duplicated magazine is the journal of the Miniature Armoured Fighting Vehicles Collectors Association. This has tank articles dealing with both full-size vehicles and modelling. It is available only to members—details from G. Dooley, 58 St George's Road, Wallasey, Cheshire. The Canadian (and parent) branch of the Miniature AFV Collectors Association also produce a bi-monthly, *AFV News*, but this is a printed magazine with pictures, drawings and articles. Details of subscriptions are available from George Bradford, RR2, Preston, Ontario, Canada.

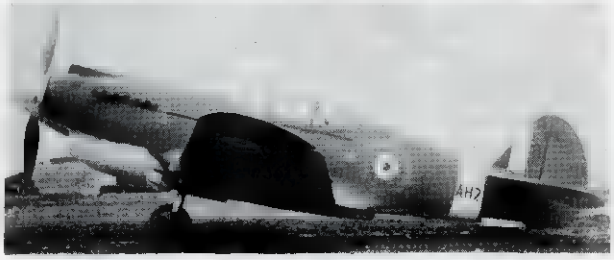


Part 5 : Fighters from Overseas

CONFLICT certainty caused Britain and France to place orders for American aircraft in 1938. After Austria's fall the need became imperative. Hudsons and Harvards were ordered by Britain on June 22 and 23, 1938, and the French shopped for fighters and bombers to supplement likely production, and replace the archaic contraptions with which they mainly hoped to defend themselves. France placed large orders for an assortment of Curtiss Hawk 75A fighters, of which 291 had been delivered by June, 1940. Many air battles were fought using them, delivery of which began December, 1938. In French hands these aircraft were camouflaged in brown and green and had light grey under surfaces.

By December, 1939, the French order stood at over 2,000 aircraft, and included the Curtiss Hawk 81A-1 Allison-powered improvement of the Hawk 75, but none was delivered before the German take-over. Neither were the 675 Bell P-400s ordered in 1939, and the same was true of the 35 Brewster F2A-3s which the Belgians ordered and the Hawk 75s ordered by Norway. Many of these aircraft were, or were about to be, delivered about the time of the German offensive in 1940. The British Government grasped the opportunity presented to obtain by direct purchase many of these aircraft, although it feared that poor fighting qualities would render many useless, except as reserves or for possible employment at sea or abroad. Whether it really wanted them or not, it soon had little choice as escaping Frenchmen brought a motley assortment of aeroplanes, in French camouflage soon overpainted in the current green-brown-duck egg green scheme. The machines Britain bought were the vanguard of a vast number of American machines for the British forces, which were later to incorporate refinements which the conflict in Europe showed desirable.

The combined Franco-British orderbook of March, 1940, had stood at 4,600 aircraft—2,440 fighters and 2,160 bombers of ten types. 2,440 were for Britain, which cut its order to 2,003 when home production gathered momentum. In May, 1940, an order for 300 Hawk 81s was switched to Britain



AH769 photographed about January, 1941, with her port wing (only) painted black and the roundel thereon outlined in yellow. Other under surfaces duck egg green; Sky bands and trim. Note the unusual styling of the serial digits and letter A.

Top: *Mohawk IV AR645 wearing grey-green fighter colours with Sky trim which included the small 'spinner'.* **Above:** *AS430, one of the few Buffalo fighters flown in Britain. This has green-brown-duck egg green finish and a black spinner.*

and, since this was the best fighter that America was able to deliver, Britain ordered another 200. Additionally, 30 P-38 Lightnings were ordered, and 40 of the new Bell P-39s.

On June 8, six Brewster fighters named Buffalo were obtained from the carrier *Berne*, and instead of going to Belgium were shipped to Britain. 'Shipped' immediately became an important word since every aeroplane would have to be crated, be subject to torpedo attack en route and to bombing on arrival. Surprisingly few airframes were lost in either manner, and the big headaches which these early American machines gave the British were to prove even long lasting.

Sometimes the aircraft arrived in natural aluminium finish with special protective skinning. When the Americans applied camouflage they often applied the wrong shades, and usually curious schemes making the under surface colours creep up the fuselage sides. For months many of the early aircraft hung around erection centres and MUs, and it was late 1940 before they were flying in any numbers.

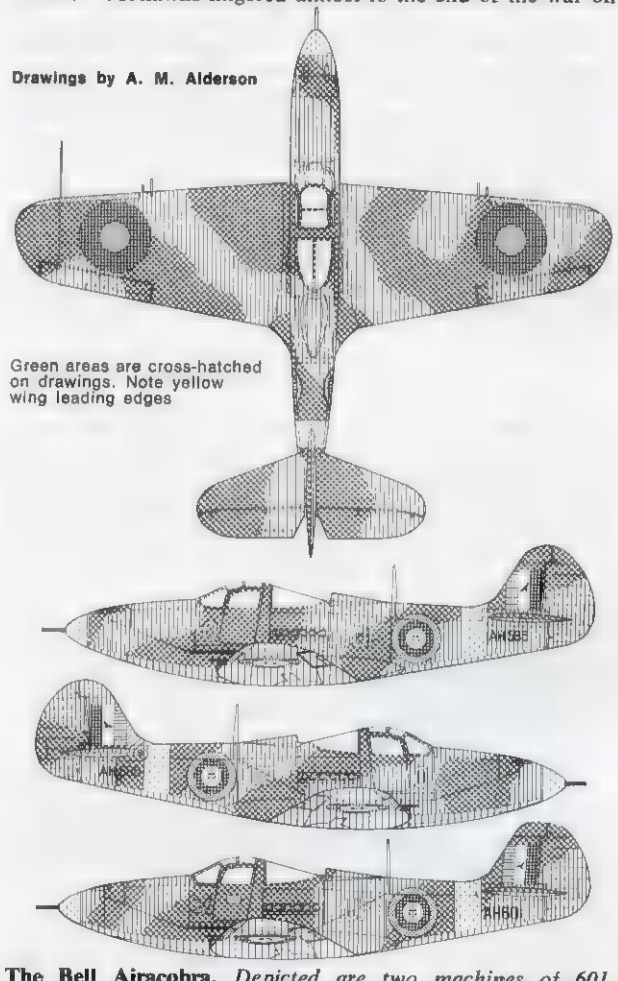
Five Hawk 75As arrived in July, 1940, and a dozen Buffaloes, vanguard of 180 ordered by Britain as F2A-2s in 1939 embracing W8131-8250 and AN168-217, most of which were diverted to the Far East. They were proved outclassed during the Japanese attacks of December, 1941. Most of the 35 Belgian-ordered Buffaloes (AS410-437 included) came to Burtonwood for preparation in the summer of 1940. Many were transferred to the Royal Navy wearing green-brown/duck egg green camouflage as applied to RAF fighters. A rather unkind notion existed to equip No 71 Squadron, the first American-manned Eagle Squadron, with Buffaloes. Indeed, three were issued to the unit at Church Fenton, but one was soon written off and Hurricanes from 85 Sqn replaced the Buffaloes. Overall performance of the machine was poor. Its .50 inch guns were changed to .303s to reduce weight, and the ammunition load was cut, also the fuel load. Apart from some trial examples at Heathrow, Buffaloes were rare oddities in Britain.

In 1939, a Curtiss Hawk 75A (No 188) was tested in Britain. It had poor fire-power and was too slow for European combat British style, but it was a very manouevrable aeroplane. Further extensive tests at Boscombe Down were flown by AR644 and AR645, for the Hawk 75As arrived in Britain in embarrassingly high numbers in the summer of 1940. The trickle from France included Hawk 75A-1s with only two fuselage-mounted guns, 75A-2s with an extra two wing guns, and the 75A-3 with four wing guns. Britain also received 75As ordered by Norway and these, with some of

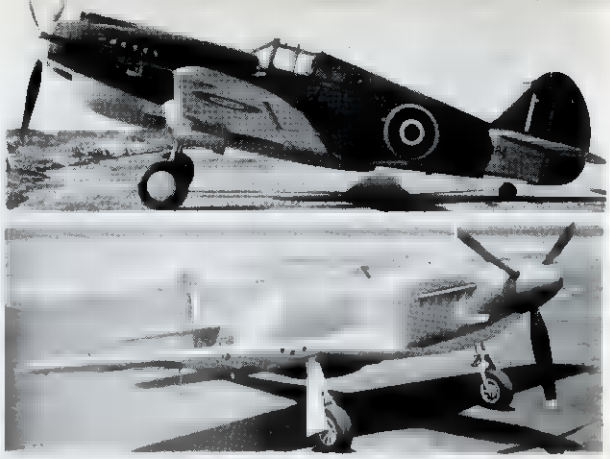
the earliest French machines, were designated Mohawk I.

Possibly the 75A-2s were called Mohawk IIs and the A-3s Mk IIIs, although it seems likely that these early marks covered various anomalies. All were powered by a Pratt & Whitney Twin Wasp. Britain ordered Hawk 75A-4 to -8 variants powered by the Wright Cyclone, and designated them Mohawk IVs. Over 100 of the latter came to Britain in 1940, but none flew operationally although they acquired standard fighter colours. For the most part a mere handful became noisy shapes at Farnborough, Boscombe and Duxford. AX886, BS789 and BL220, amongst others, served at Odiham as advanced trainers. Several that I saw flying from Duxford had silver under surfaces. One, BS744, that I recorded firing its guns at AFDU Duxford on July 13, 1941, had duck egg green under surfaces and the usual 18 inch rear fuselage band. By September it had grey-green-grey camouflage.

A few Mohawks lingered almost to the end of the war on



The Bell Airacobra. *Depicted are two machines of 601 Squadron in use at Duxford in October, 1941. The fuselage roundels on both machines were slightly smaller than the usual 3-foot diameter type, and seem to have been 32 or 33 inches across, an unusual measurement. AH585: UF-O also had a smaller serial than usual, probably 7 inches high or slightly less. AH601, the lower machine, was the Squadron Commander's aircraft with a yellow winged arrow motif in place of the individual letter. Both had the grey-green finish with Sky codes and adornments.*



Top: *Tomahawk IIB AK184 in green-brown-duck egg green scheme. Note the not unusual absence of Sky band. Spinner is Sky. Roundels are Type C. and the aircraft was thus adorned in October, 1942.* **Above:** *Without doubt the Mustang I was one of the most aesthetically appealing American aircraft of WW2. AG348 seen here was the 4th machine. Green-brown-duck egg green finish. Spinner probably brown, too, at this stage* (Imperial War Museum photos).

communications duties, wearing current fighter paint schemes. They included AR630 and AR633 used by 24 Sqn and later by 510 Sqn at Hendon. Mostly the Mohawks were disposed of to Portugal, South Africa, the Middle East and in particular to the Far East, where they gave very good service.

The first Hawk 81A-1 Tomahawk arrived in England in September, 1940. It was one from 140 which the RAF took over from the French order. Early machines had only two fuselage guns, but successive improvements led to the Tomahawk IA and IB with heavier wing armament. Again, the story was the same. Here was an aeroplane that would be no match for the Luftwaffe, yet had some points to commend it . . . except, of course, its liking for ground loops. Tomahawks were arriving in large numbers towards the end of 1940. Whilst many were being erected, trials were flown and possible employment considered. Boscombe tested AX900 and at Duxford I found AH863 still on trials and firing her guns at the butts on April 5, 1941. AH861 was there, too, and the markings on these two typified those of Tomahawks. Both were camouflaged dark green and dark earth, and had duck egg green under surfaces. Sky spinners and rear fuselage 18 inch bands were worn. During the winter weeks, incidentally, the Tomahawks had acquired black under surfaces to their port wings, the underside roundels of which had yellow outlines.

Tactical trials showed that the aircraft performed quite well at low levels. It was decided, therefore, to issue Tomahawks to army co-operation squadrons, mainly replacing Lysanders, a process begun in April, 1941. These machines were coloured like those aforementioned, and typified by AH848 coded SP-Y (medium grey codes, unit letters forward) which I recorded thus marked on August 18, 1941. Brown-green finish was retained on the army co-operation recce-fighters until July-August, 1942, when the change to grey-green was made an Official general requirement, as opposed to a Fighter Command order.

Later the Tomahawk IIA and IIB, Hawk 81-A2 and -A3 respectively, appeared with four wing guns and two fuselage guns. The first version had British equipment and the second American. Late in 1942, Tomahawks retained their browns and greens, and on September 6, AH947 and AK137 at Bottisham in the hands of 241 Sqn, but uncoded, still wore

Continued on next page

Fighting Colours — continued

these colours, though soon after they conformed to the usual green-grey finish with Sky codes and trim and yellow wing leading edges. The Tomahawk squadrons and examples of their machines used in Britain were:

Sqn	Unit Code	Serial	Date/notes
2	XV : S	AH942	In use 8.41; earlier aircraft were coded KO
4	?	AH791	Possibly never carried any squadron code; 4.42
26	RM : Y	AH896	6.41 Used for offensive ops, late in 1941
168	EK	AH861	7.42. Sqn formed summer 1942; green-brown acft
171	?	AK137	7.42. Possibly never had squadron code
231	MV?	AH947	5.42. Possibly never had squadron code
239	HB	AH880	7.41
241	RZ	AK137	9.41. 241 Sqn aircraft had grey codes
268	OE : B	AH896	23.8.42; OE forward on both sides; grey-green camouflage. NM code probably carried earlier, but certainly coded OE from 8.42
400	SP : Z	AH756	In use 5.41
403	KH : H	AH896	In use 4.41; grey codes, Sky band, spinner
414	RU : Z	AH935	In use 9.41
613	SY	AH905	In use 8.41

Tomahawks flew low-level offensive strikes, usually in pairs, on fringe continental targets in 1941-42.

The Douglas DB-7 became available to Britain as a result of broken French contracts and a few escapees. This aircraft was in no sense a fighter in its early form, and the first machines were designated Boston I or II bombers depending upon engine type. There seemed initially no apparent use for the machines except as trainers, but deliveries built up as the German night blitz was reaching its climax. It was therefore decided to issue the DB-7 as the Havoc I night-intruder, deliveries probably beginning with AX849 and AX850 to No 23 Squadron in October, 1940. Still in green-brown-duck egg green finish (quite unsuited to night operations), these machines carried four guns in the base of the nose which retained its transparency. In December, before operations commenced, they acquired RDM2 black finish and almost white code letters. During 1941, 23 Sqn completely equipped with Havoc intruders.

A second use to which the Havoc was put was as an all-black night-fighter with white code letters which changed to red about September, 1941. An extra four .303 inch guns were fitted in the 'solid' nose and full 'bow and arrow' aerials on the nose and wings for A.I Mk VI, readily carried in the plentiful space available. A handful of Havoc Is were modified to carry the Long Aerial Mine as Havoc IIIs, later known as Havoc I (Pandora). Over 30 Mk Is had a Helmore searchlight fitted in their shorn noses. Batteries in the bomb bay gave it power. Unarmed, these aircraft patrolled using A.I radar to guide them to their quarry, which they then illuminated for Hurricanes on either beam to destroy. Development was lengthy and the techniques took long to perfect. By 1942, when it came into use in ten units it was already being outmoded by the success of A.I equipped night-fighters, although it was 1943 before the Turbinlite squadrons disbanded.

Britain also took over the French order for Douglas DB-7As with their longer nacelles and vertical tail surfaces of greater area. They were powered by Double Cyclones. Martin Baker designed a new nose for some of these aeroplanes, carrying 12 × .303 inch machine-guns and nearly 100 were thus modified as fighters.

Space permits only a very brief survey of the Havocs and their squadrons, for this was a most involved story. Main units and representative machines were:

Sqn	Unit code	Example	Notes
Havoc I			
23	YP : G	BB900	Intruder ;'Solid' nose. Mid '41
85	VY : R	BJ472	'Solid' fighter nose. Mid '41
■	HN : G	BB893	L.A.M. machine. Mid '41
605	UP	BB895	Intruder; transparent nose. Mid '42
1422 Flt	?	BJ497	Turbinlite trials machine. Oct '41
Havoc II			
85	VY : A	AH500	In use in the summer of 1942
1422 Flt	?	AH483	Night-fighter trials unit

In addition, Nos 1451-1460 Flights (later 530-539 Squadrons) used a very large number of Havocs, some with Turbinlites and some with 'solid' fighter noses. Typical examples included BD110 (534 Sqn), BJ470 (1456 Flt) and BJ467 (532 Sqn). Probably all of these units carried squadron codes and 1457 Flt may have carried the letters JO. Unit codes on the Havocs were invariably carried immediately aft of the mainplane. Many of the Turbinlite machines were really Boston IIIs converted to carry searchlights, and not Havocs, and included W8257 and W8303 of 531 Sqn based at West Malling and W8398 of 1451 Flt and later used by 530 Sqn whose unit codes are known for sure to have been NH, from late 1942 until it disbanded in January, 1943.

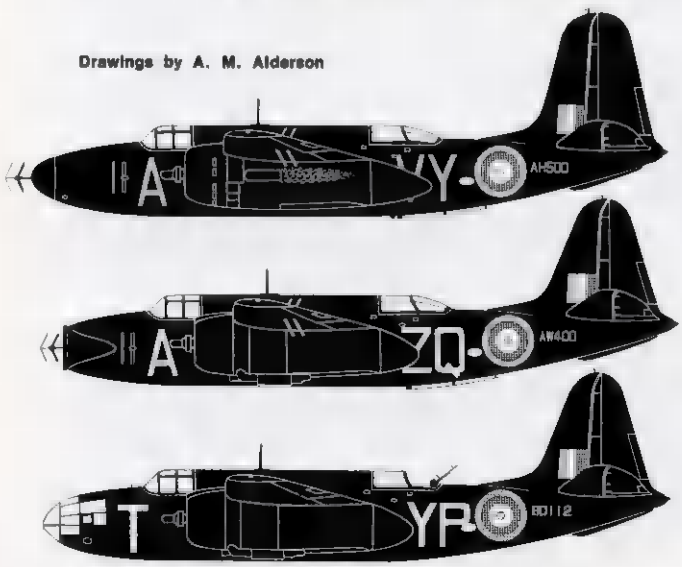
About 80 of the 675 Bell Airacobras ordered eventually for the RAF were accepted for service. Poor performance and low engine-altitude rating made them useful only for ground strafing, but already Tomahawks were well estab-

Continued on page 232

Below, top to bottom: *Havoc II VY-A : AH500 of No 85 Squadron used in the summer of 1942, hence red codes and serials. Havoc I (Turbinlite) ZQ-A : AW400 of the Fighter Interception Unit early 1942. Very light grey codes, red serials. Had A.I. nose aerial identical and identically sighted on each side of the nose searchlight rim. Havoc I (Intruder) YP-T : BD112 of No 23 Squadron used as an intruder in 1941. Very light grey codes and serials.*

Exhaust stacks were a 'burnt bronzy-grey-metal' shade on these aircraft. All the fuselage roundels on the Havocs were basically 48 inch diameter, but there were various extensions or deletions of the yellow and white rings. Fin flashes were 24 inches wide and 27 inches high. Code letters were, basically, 42 inches high but again there would obviously be variations. The 8 inch high serials often at first glance looked unusual on the imported aircraft because the spacing of the digits, etc, was often non-standard. On some machines a full stop followed the prefix lettering, a method in which they were often listed in official documents.

Drawings by A. M. Alderson



lished and proving less troublesome, and the Mustang was not far behind. The first Airacobras for trials arrived at AAEE and AFDU in July, 1941. DS174 was one which I recorded at Duxford on July 13, wearing dark green, dark earth and duck egg green, with Sky spinner and band. A few weeks later, pilots came from 601 Sqn to Duxford to begin working up on the new type. Delivery of Airacobras with dark sea grey-dark green/medium sea grey colouring with Sky band and spinner began at Matlask in August. During October, the squadron, now at Duxford, busily trained. Placing of squadron codes was unusual, for the letters UF appeared ahead of the roundels on both sides of the fuselage and the individual letter far forward, as on UF:J-AH593, UF:O-AH585, UF:W-AH602 and UF:N-AH582. All the Airacobras I saw in 601's hands had the winged arrow motif of the squadron painted in black on the white stripe of the fin. An interesting feature of this latter was that on some machines it sloped slightly aft, and did so on UF-W and AH601 the squadron commander's aircraft. On October 9, a handful of Airacobras detached to Manston made the type's debut over France, shooting up coastal targets. But the operational phase totalled only eight sorties and an accumulation of snags led to the aircraft being withdrawn in March. The squadron was then at Acaster Malbis, and the Airacobras left for Colerne and soon joined the large number sent to Russia.

Another American type which deserves mention is the Lockheed P-38 Lightning, for its unorthodox shape always captured interest. In April, 1940, the RAF ordered 150. Later the order was vastly increased for what seemed like a businesslike machine. Yet again performance was poor, and very few were delivered to Britain. The first two in green-brown-duck egg green finish arrived in December, 1941, as AE978 and AE979. Next month AF108 came to Boscombe. AF106 was there in April, after engine modifications at Coventry. In July, AF105 came with still further modifications, but the lengthy development period took the P-38 into the time scale during which better new British fighters were being successfully developed. Thus the other airframes marked for the RAF were passed to the USAAC.

So far, none of the American types—except the Havoc and possibly the Tomahawk—could be considered really successful. With the arrival of AG346, the second North American Mustang I, in October, 1941, it was apparent that at last the Americans had produced something worth a second glance—as well as a machine which might prove very successful. AG346 with a low-altitude Allison showed itself very manouevrable and to possess a very long range. Its good armament was ideal for low attack and, with an F24 camera installed aft for oblique photography, it was decided that here was the ideal replacement type for the Lysander and Tomahawk. AG365 arrived at Duxford in January, 1942, for tactical trials and comparison with the Bf 109 which, to an extent, it externally resembled. Low down it was very fast and at 15,000 feet had a top speed of 380 mph.

Again, these fighters delivered in quantity in the first three months of 1942, had dark green-dark earth-duck egg green finish. Although I saw quite a large number of them, it was May 25, 1942, before I saw one (AG422 at AFDU) with ■ sky fuselage band . . . and this was for a while an oddity. The Mustangs also had black spinners for many months. On April 26, 1942, I first noted some coded examples, belonging to 241 Sqn based at Bottisham where they had begun to arrive mid-March. AG-405 was one which, like others, had

Top: *Airacobra I AH601 being serviced at Duxford.* **Above:** *A line-up of 601 Squadron Airacobras with AH585:UF-O nearest and UF-W:AH602 next* ('Aeroplane' photos).

a hyphenated serial. Two machines on the field were B-RZ and E-RZ, looking most curious because the entire medium grey coding was forward of the fuselage roundels. AG367: RM-Z (RM ahead of the roundel both sides of the fuselage) I recorded at Debden on March 17, 1942, and in grey-green fighter colours with usual Sky trim and yellow leading edge stripe.

Mustangs began low-level paired strikes on Continental targets on July 27, 1942, probably wearing the grey-green scheme. Mustang I squadrons and examples of their machines in the period under review, were:

Sqn	Unit Code	Serial	Date/notes
■	XV:V	AM112	July, 1942. Grey-green, C1 roundels; earlier coding UG was used
4	—	AG426	July, 1942. Probably no unit code
16	—	AG573	July, 1942 do
26	RM:Z	AG367	April, 1942
169	VI	AL988	June, 1942. Probably no unit code after a few weeks?
170	—	AL970	June, 1942. Probably no unit code
225	WU?	AG414	May, 1942. Code uncertain
239	HB	AG472	June, 1942
241	RZ:W	AG645	June, 1942; conventional code placing now. AG512:RZ-A green/grey finish. September, 1942
268	NM?	AG413	June, 1942. Probably no unit code
400	SP:P	AG521	November, 1942. Grey/green finish
414	RU	AG420	June, 1942
613	SY:I	AG495	April, 1942

Some useful reference material on the American aircraft used by the RAF may be found in these issues of AIRFIX magazine: April, 1962: Harvard; July, 1962: Mustang I; January-February, 1964: Boston/Havoc; May, 1964: Hudson; January, 1965: Curtiss fighters; February, 1965: P-36 conversion; April, 1965: Havoc conversion; May, 1965: Airacobra; June, 1965: French fighter colouring; January, 1966: Harvard conversion.

Michael J. F. Bowyer

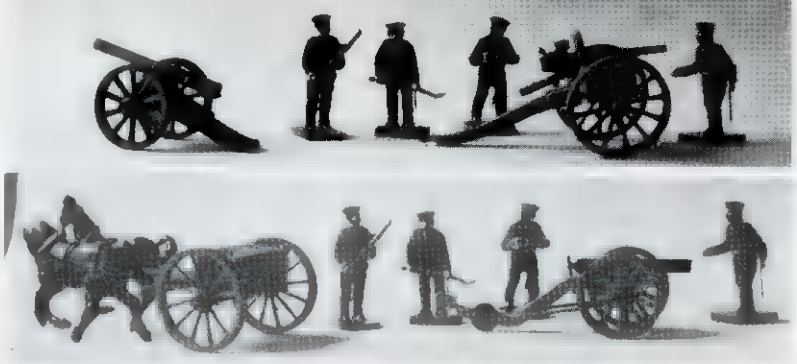
Summary of fighter aircraft acquired from the USA 1940-42, excluding those supplied under Lend Lease.

Bell P-39 Airacobra I: AH570-739 (about 80 of these reached the RAF), AP264-384 (mainly to USAAF in UK; others to USSR), BW100-183 and BX135-434 (mainly to USAAF in UK and to USSR), DS173-175 bought for evaluation and received in Britain July, 1941.

Brewster 339 Buffalo: W8131-8250 mainly shipped direct to Singapore also AN168-217. AS410-437 mainly to Royal Navy. BB450 passed to Royal Navy 9.40, ex-Belgian contract. AX811-820 mainly to Royal Navy.

Curtiss Hawk 75A/P-36/Mohawk III I ■ IV: AR630-694 mixed III/IV, AX880-898 (ex-French order; shipped overseas), BB918-937 and BB974-979 (shipped abroad), BJ531-550 (Mk IV; mainly shipped abroad), Mk IVs known to have had BJ serials: BJ574, 575, 577, 581, 582, 583, 587, 588; BK569-588 (Mk III, ex-French; shipped overseas), BK876-879, BL220-223, BS730-738 (Mk IV), BS744-747 (Mk IV), BS784-798 (Mk IV), BT470-472 (Mk IV) all these in the BS series being mainly disposed of overseas. LA157-158 and LA163-165 known to have been airframes assembled in India.

Continued on page 242



Top, left to right: *Williams Machine Gun, Union naval gun crew converted as described in text, Agar Machine Gun or Coffee Mill gun.* **Above, left to right:** *Two-horse limber for the Agar gun made from standard Airfix Civil War limber, US Navy figures, US Navy 12-pounder howitzer on field carriage.*

US CIVIL WAR

Michael Blake concludes his series

MACHINE guns played a minor part in the war, but both sides did have these weapons and they make interesting additions to any Civil War wargames army. Excluding the Gatling gun, which has been covered in the recent series on the Zulu Wars, examples can be made easily from Airfix parts.

The Agar was the official Union Repeating gun, and was also known as the Coffee Mill gun. It fired a .58 cal Minie-type ball at a rate of 120 rounds per minute. To make this gun, use the anti-tank gun from the Afrika Corps set. Cut off the handgrip, leaving it complete to form an open box. Cut the barrel to 15 mm, and cut the gun from its stand/support. Now push a short length of pin through the support into the gun so that the gun can swivel on it. Trim the shield to 7 mm wide. Cut the rear leg to 8 mm and bend straight, to form the aiming handle. Push another pin through the breech and bend it to make the firing handle on the right side. The handgrip is now stuck on top of the breech, widest side parallel with the shield to make the gravity feed bullet hopper. For the carriage, take an Airfix Artillery carriage and stick two trunks from the Wagon Train set cut to fit over the axle for ammunition boxes on the axle either side of the stock.

The gun fits into the trunnion holes by the protruding ends of the trimmed front support. The gun was pulled by a two-horse limber, made from the artillery limber with the pole cut to 25 mm.

The Williams Machine Gun was the 'secret weapon' of the Confederates. It was 1.57 cal, with a fire rate of 60 rounds per minute. The barrel and breech must be scratch built from ball pen refill and wood. Make the breech from a 13 mm length of ball pen refill, and the barrel from a 20 mm length of obeche wood inserted in the tube, so that 15 mm protrudes. A short length of pin pushed through the breech end becomes the aiming handle, and a firing handle is also made from a bent pin as for the Agar gun. The mounting is made from a narrow section of larger ball pen refill cut through to make a clip (see drawing) with a length of pin through to fix into the carriage. The carriage was the one-horse shafted mountain howitzer type, made as described in the January issue, with the cheek tops cut level with the stock to remove the trunnion grooves.

Crew for these pieces come from the Artillery Crew, ie, the two figures without rammer or handspike.

Marines and Sailors

Marines and sailors, mainly Federal, took part in a number of amphibious operations, and served on board ship and as gun crews in forts. A contingent of Yankee Marines was at first Manassas.

Federal Marine full dress was dark blue shako and frock coat, with white cross belts and blue grey trousers. Large gilt epaulettes, red trim on jacket collar and cuffs, red trouser stripe, red pompom and brass badge and trim on shako, and brass breast plate completed the outfit. Note that the cuff trim was of the flap type, not 'V' shape as with the other services. To make marines, use Union Infantry figures with kepis cut off level with peaks and shakos from sprue stuck on. Pompoms are from pin heads, and frock coats are built up from Barbola. Officers wore a kepi and frock coat, with white sword belt. For these use the Airfix officer with slouch hat trimmed to form a kepi.

Yankee sailors wore a blouse (called a 'frock') with large flap collar at back, trousers and flat sailor's cap, all in white or blue. Armament was a cutlass, carried in a frog on left hip and single shot box lock percussion pistol in the belt. Sailors can be made from Union Infantry with heads from 1914 British Infantry. Remove the peaks from the caps, and back packs, haversacks, canteens and any coat detail below waist. The flap collar line is cut across the back, and into 'V' shape at front. Neckerchiefs are painted on, and cutlasses from scrap plastic and pistols from bent pins added as necessary. Figures with rifles can either have them removed completely, or short sections can be left in the figure's hand to represent pistols. Thus the kneeling figure retains a short piece of his rifle in his right hand, and the left arm is twisted down so that the hand rests on the knee. The 'stabbing' figure has all rifle detail removed, and is given a cutlass in his right hand. Officers wore a peak cap and frock coat in undress and Airfix officers can be used, with heads from 1914 British Infantry with peaks retained.

Confederate marines wore the regulation style uniform with black trim on jacket collar and cuffs and black trouser stripe. Single-breasted fatigue jacket was grey with light blue or black trousers. On board ship, a grey sailor's cap with black band was worn, and on land a kepi in light blue or grey with black band was worn. Germans of 1914 in flat caps, with unwanted details removed and the boot tops trimmed down to make trousers to the feet make excellent marines. Heads from Union Infantry can be added for shore service marines. Officers wore double-breasted frock coat in grey with collar, cuffs and coat edges trimmed in black. Shoulder epaulettes were gold cord with red inside the trefoil (see drawing). Waist sash was crimson with gold and crimson fringe. Trousers were sky blue with black stripe. Headgear was black soft cap on board and black kepi ashore.

Confederate sailors wore grey jacket

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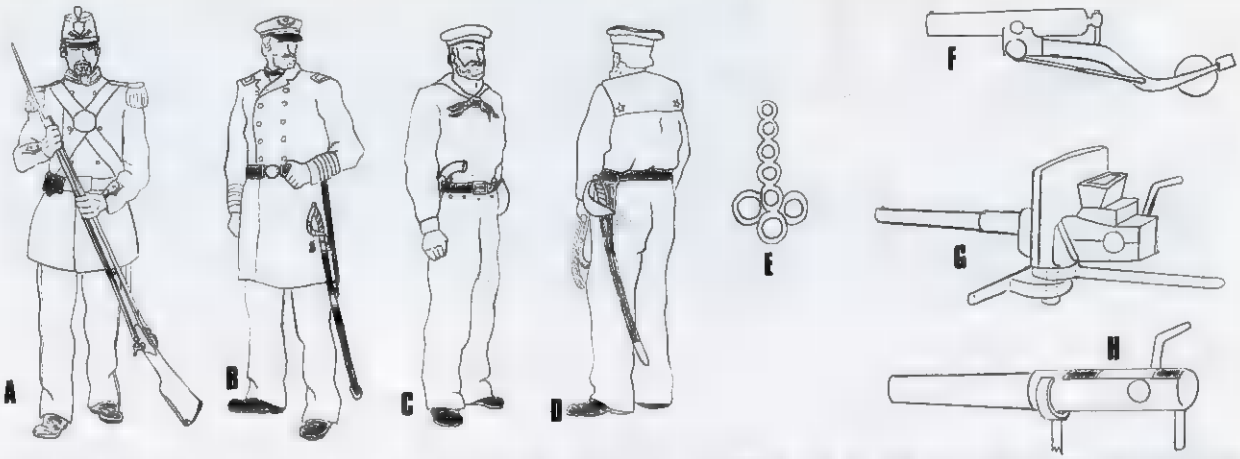


Civil War naval uniforms and gun equipment. All colours given in text. **Key, left to right:** *A—US Marine; B—US Navy officer; C—US or Confederate blue jacket, front view; D—US or Confederate sailor, rear view; E—Confederate Marine officer's epaulette: gold lace with red centres inside three larger loops; F—12-pounder howitzer and carriage; G—Agar Machine Gun; H—Williams Machine Gun. F, G, and H not to scale, dimensions in text.*

US Civil War—continued

and trousers, or grey frocks with white collars and cuffs, black neckerchiefs and hats. Officers wore grey coats, and grey or white trousers.

The gun normally used for landing operations was the light 12-pounder howitzer on a field carriage. To make this piece the artillery set is utilised. The barrel must be shortened to 22 mm and the elevating rod removed. A length of pin through the breech button becomes the new elevating screw. Shorten the axle equally to 21 mm, recut wheel grooves, and bend the trail to curve and recurve as in the drawing. Remove the towing ring and replace with 3 mm of ball pen refill. Cut a 7 mm slot in the trail clear of the end and insert a 6 mm diameter wheel made from plastic card. Finish the carriage with two wire strengtheners, one each side from stock to axle. The wheels are front wheels from the Wagon Train wagon. Crew come from the Artillery crew converted as for sailors.

Engineers

Engineers played an important part in both armies. Seige operations and defences, amongst other things, were their problems, and the equipment used includes items which can be made or converted. Chevaux-de-frise were used in defence lines and to block roads, etc. They were logs drilled through at right angles for projecting sharpened stakes. Use 44 mm lengths of balsa about 4 mm thick with pins every 3 or 4 mm as stakes. Basket sap rollers were filled with earth and rolled in front of sappers digging towards enemy emplacements. These can be made from hair rollers 'requisitioned' from sisters, wives or girl friends. The roller should be about 15 mm wide, 33 mm long, and suitably filled and painted.

Sappers can be obtained from the figures with spades and pickaxes from the Afrika Corps set, trimmed and painted appropriately.

First world war French Infantrymen with spades, when converted as described in the Infantry article, can be used as 'press-ganged' Zouaves.

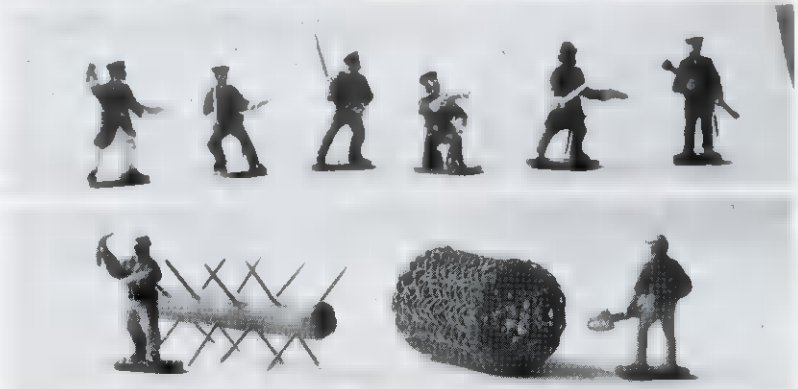
Service colour for Confederate Engineers was buff, so give Rebel Engineers kepis and trim of this colour. The officer's waist sash, when worn, was red.

Further aids

The American Civil War modelling enthusiast can do no better in books than buy the excellent *Arms and Equipment of the Civil War* by Jack Coggins, published by Doubleday & Co. This details in text and drawings almost every piece of equipment used in the conflict. *Centennial Album of the Civil War* by M. Pakula contains useful uniform information but is expensive.

The Confederate High Command is a society devoted to the study of the war, and despite its name caters for both Northern and Southern enthusiasts. Details can be obtained from Secretary Marcus Hinton, 'Rowsley', River Road, Taplow, Maidenhead, Berks. I must gratefully acknowledge help from the members of the CHC in preparing these articles.

Previous articles in this series : October 1967—infantry figures and uniforms. November 1967—cavalry regiments and uniforms. December 1967—Confederate and Union artillery. January 1968—medical and supply depts plus bands and mountain artillery. Please note that the old 1963 and 1964 issues advertised last month are now all sold though some 1966 and 1967 issues ▮▮▮ still available from the editorial office at 2s 6d per copy.



Top, left to right: *US Navy officer, three US Navy sailors adapted from Union infantry with British 1914 heads, Confederate Marine officer, and US Navy gunner with rammer, wearing cutlass.* **Above, left to right:** *Chevaux-de-frise and basket sap roller, flanked by Confederate engineers converted from Afrika Corps figures.*

NEW KITS AND MODELS

QUARTER SCALE LYSANDER

HAWK'S recently produced model of the Westland Lysander in 1:48 scale has now become available on the British market. It is a well moulded, accurate replica of the full-sized aircraft, having almost 60 parts produced in green plastic.

In quarter scale the interior of the Lysander's cockpit can be given the full treatment and Hawk have provided the basis on which to work. Accurate shapes for the seats, panel and central fuel tank are provided as are the mounting, ammunition pans and Lewis gun in the rear cockpit. Unfortunately, the floor is missing but can be easily made from card. Elsewhere the engine is well detailed and the character of the fuselage panels well produced.

The decals represent an aircraft of No 16 Squadron, L4806, seen in May, 1940, and involve the model maker in painting the underside of the port wing black and the starboard white. The sheet of transfers itself is accurate and well printed.

Although this kit is accurate in outline, there are one or two minor items that may have been included without too much extra effort on behalf of the manufacturer. These include the message hook, which was a standard fitment on Army Co-operation aircraft at that time, and appeared on the starboard side under the rear of the fuselage. It can be added by the detail-conscious modeller but he will be harder pressed to make the transparent panels which appear in the rear fuselage close to the leading edge of the fin. Similarly, the landing lights and gun ports in the wheel-spats are missing. With a wing span of just over 12 inches, the Hawk Lysander retails for 13s 9d and is good value. BMW Models of Wimbledon have supplies. *A.W.H.*

POWER DRILL

MOST plastic modellers would count a big power drill something of an unnecessary luxury, and we must admit that having had a Black & Decker Powerdriver on loan for test over two months we were unable to find any occasion when it could help us directly to assemble any plastic kit that came our way! For the record, however, the Black & Decker Powerdriver is an impressive piece of machinery which drills holes—very fast—up to $\frac{5}{16}$ inch diameter in steel or bricks, and up to $\frac{5}{8}$ inch diameter in wood. It works direct off the mains with trigger control and a pistol grip, weighs $3\frac{1}{4}$ lb, and is an easy and pleasant machine to handle. There is no very small drill in the vast range of drills available in the Black & Decker range, and the speed and heat generated makes its acquisition pointless to anyone who makes plastic kits only.

However, for anyone who counts plastic kits as only one interest and who does work around the home, maybe makes model railway baseboards and so on, such a drill would be a very worthwhile investment. We assembled a bookcase from planks in a couple of hours, using the Powerdriver to drill out holes in the ends for dowelling in little more time than it took to line up the planks. Using a hand-drill the same job would have taken days, even if we'd bothered to attempt it. Thus the Powerdriver has a most definite value for the home handyman. For anyone who has wished for a lathe, for instance, Black & Decker make a suitable stand which takes the drill in a clamp to provide the motive power. There is an astonishing range of accessories including countless drills, sanders, buffers, saws, clippers, and stands. The Powerdriver itself costs £5 10s, but there are many other models in the range as well. Anyone requiring further details can obtain a free illustrated catalogue from Black & Decker, Cannon Lane, Maidenhead, Berks. *C.O.E.*

MORE HUMBROL PAINT

LATEST in the new Humbrol Camouflage colour range covers World War I aircraft colours and consists of RFC Green (the familiar khaki-green of RFC and RNAS aircraft), 'Clear Doped Linen', German Pale Yellow, German Green, German Purple, and German Light Blue. Like the previous releases, these will certainly be an invaluable addition to the modelling stock of aircraft enthusiasts. In passing, it is worth mentioning that the purple included in the set would also be applicable to German tanks of the period (with other colours, of course) and the German Green of the set is similar to field grey of German uniforms. These are quick drying matt paints, sold only as a set at 9s 6d for the six colours. A pamphlet is included. *C.O.E.*

MONOGRAM TRIO

THE introduction of 1:72 scale kits by Monogram has obviously been welcomed by modellers. Always praiseworthy for the interest and accuracy shown by this company in their larger offerings, the latest venture into a smaller scale has not changed this commendation.

Three kits have been made available to us for review though there are others on the market. These three are the Bearcat, Tigercat, and Curtiss P-36A. Each one is excellent in its own way but we preferred the Tigercat for its superb detail and accuracy of fit. The only fault that could be found in this 40-part kit was slight inaccuracies around the engine nacelles which tend to end rather abruptly and not in a more rounded shape revealed from a close study of photographs. Markings for the kit are simple. A ten-part decal sheet provides insignia for an aircraft which it is believed was used for test purposes and is presumably one of the pre-production batch. Modellers will soon find alternative squadron markings, and there is always an interesting conversion to make in the night fighter version with its modified nose shape. Price is 13s 9d.

The Bearcat, too, is a delightful kit both to build and decorate. It contains 32 parts accurately moulded even down to the pilot figure which is one of the points almost universally badly treated by the manufacturers. Again our criticisms are rather small but it is as well to advise model makers where accuracy is concerned, as true perfection is the ultimate goal for anyone working in this field. The model

Continued on next page

provides cannon in the wings similar to the F8F-1B which had 4×20 mm weapons fitted in the purely post-war variant. The decal sheet, on the other hand, depicts Lt Cdr Caldwell's aircraft of VF-20A, an F8F-1 without the cannon. It is a simple matter to break the offending parts off before sticking the wing halves together but this point should have been mentioned in the kit instructions. A good photograph of the kit aircraft appears in Profile No 107. Price is 9s.

The Hawk P-36A is the latest in a whole spate of these aircraft put out by the leading manufacturers. As such we feel it has a very slight edge on the Heller variant which we liked as much as any until the arrival of this one. The decal sheet features an aircraft of the 94th Pursuit Group similar in fact to the sheet issued by ABT decals some time earlier. The kit is accurate and although the wing joints do not come together as well as they might, the rest of the kit deserves high praise. Price is 9s. BMW supplied our samples. *A.W.H.*

FRENCH STALWART

MOST recent military model to come to hand is a very fine die-cast replica of a Berliet Aurochs, which is, in fact, the French-built equivalent (under licence) of the Alvis Stalwart military amphibian truck. Made by the French firm of Solido, this is a superbly detailed model complete with radio aerial, opening hinged roof hatches, fully fitted cab interior, tow hook, and independent spring suspension on all six wheels. This latter feature looks most realistic when the model is pushed over an uneven surface. Finish is matt dark green with French army numberplate. Three crewmen figures are provided and can stand in the hatchways or in the rear of the vehicle; all are in diving dress. The model is to 1:43 scale and does not look at all out of place with 1:48 scale military vehicles. Our sample was supplied by Grand Prix Model Raceways Ltd, 122 King Street, London, W6, who hold stocks of this and other Solido military models (including the M47 and Soviet PT76). The Aurochs costs 29s 11d, postage extra. *C.O.E.*

WESTERN WAGONS

INTERESTING new release from UPC is a range of four new 'Wild West' wagon kits to 1:40 scale, comprising a covered wagon, a medicine wagon, a stage coach, and a chuck wagon. We received the first two of these for review and found them to be nicely moulded replicas of the types of vehicles familiar from Western films. The covered wagon is drawn by yoked oxen and is complete with a mounted cowboy outrider and wagon passengers. Detailing is good, with the complete chassis depicted including the brake and brakeshoe, plus a saw, bucket, rifle, and other equipment. Painting instructions are given on the 'exploded' instruction sheet. The medicine wagon is drawn by two horses and is complete with a 'quack' selling his wares, a cowboy, Indian, and onlookers.

Though to 1:40 scale, both models would go with 1:32 scale figures like Britains cowboys or Historex soldiers if the figures and animals provided in the kits were replaced. In addition both kits provide an inexpensive set of spoked wheels and other components for enthusiasts who might wish to build up other wagons utilising the parts. In particular, the covered wagon would convert quite easily into a British-style 19th century farmer's dray. The kits cost 8s 11d each and are available from Grand Prix Model Raceways Ltd, 122 King Street, London, W6, postage extra. *C.O.E.*

COMPREHENSIVE COLOUR RANGE

READERS will have seen from BMW advertisements that they are now marketing a new series of enamel paints for plastic aircraft modellers. There are 66 different colours available in 2 oz tins which retail for 2s each.

The new colours, which are manufactured in France, are indexed by an identifying letter and number on the lid of each tin. The actual colour on the lid appears to differ in some cases from that which is inside and prospective purchasers should obtain the four-page list of colours available from the retailers before making a purchase.

The colour itself brushes on well but appears to take at least two hours to dry hard. Where matt colours are concerned this quality is well done and if carefully applied no brush marks can be detected. We did not have the opportunity to test the matt black. Similarly, no silver was sent for test purposes. This colour is almost surprisingly absent from the range and only a matt silver is obtainable in the Japanese range.

Other colours worthy of note are a matt yellow for RAF trainers, a Zinc Chromate for USAF interiors and a metallic grey black, none of which can be purchased in the more popular ranges. The national camouflage schemes which are available from this paint range are French, Luftwaffe, US Air Force and Navy, Japanese, RAF, Italian, NATO and Finnish. *A.W.H.*

DECAL SHEETS

MENTION was made in the January issue of the new AIR Decals which have recently become available on the American market. This month comes news of a further five sheets which add considerably to the previous range and give the modeller a really comprehensive collection of decals for all types of United States aircraft models.

Sheets No 6 and 7 of the new series contain 1:72 scale (on the former) and 1:48 scale (on the latter) USAF stars, neutrality flags *and* Vietnam mini-stars for the camouflaged USAF aircraft. Also included are rescue arrows, 'beware of blast' markings and ejector seat triangles. Both retail for $1.25 and in the 1:72 scale sheet there are over 60 stars of 15 different sizes. The price seems high but the selection is large and varied. One of these sheets will keep the average model maker going for some time.

Sheet No 8 contains 1:72 and 1:48 Air National Guard markings. Both black and white lettering is included ranging from ¼ inch to 3/32 inch in five sizes. There are several alphabets and the Minute man symbol often used on ANG aircraft. Price: $1 for a sheet 6 inches × 10 inches.

Sheet No 9 is an extension of the first sheet issued by AIR Decals. It contains black lettering for the words 'USAF' and 'MATS', 'MAC', 'Pacific', 'Atlantic', 'Continental Air Divisions' in white for tail insignia. 'US Army', 'US Navy' and 'Marines' come in sizes from 3/32 inch to ¼ inch in both black and white. The size of the sheet is 8½ inches × 11 inches and costs $1.25.

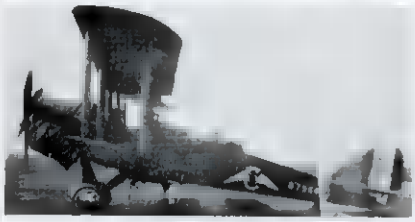
The last of the new sheets, No 10 in the series, contains USAAF and USAAC roundels used from 1921 to 1942. There are over 55 stars in 12 different sizes and the sheet costs $1.

We cannot do more than recommend these excellent decals most highly. It is unfortunate that, as yet, there is no British agent importing them in bulk, so potential purchasers will have to obtain an international money order for the required amount and order direct. The American distributor's address is AIR Decals, Box 303, Pemberton, New Jersey 08068, USA. *A.W.H.*

photoPAGE

More rare pictures from readers with captions by **Michael J. F. Bowyer.** A free Airfix kit is awarded for every picture published, but please note that there is usually ■ delay of some months before publication due to the limited space at our disposal.

1



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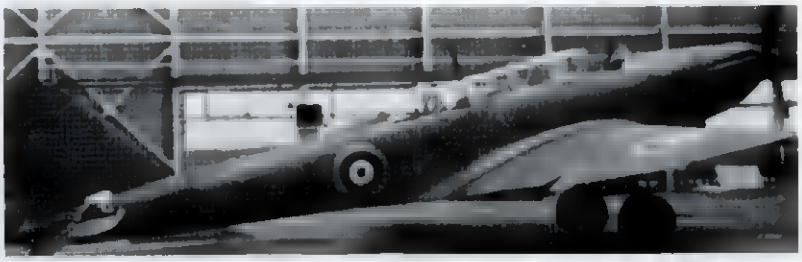
Key to numbers : Michael Beckett submitted pictures showing **(1)** Avro 504J, B3155, with silver finish and unusual spinner; **(2)** DH4, B7964, ■ rebuilt aircraft from No 1 Aircraft Repair Depot, Sth Farnborough; **(3)** DH9A, E9727, built by Mann Egerton of Norwich. All were pictured in the Rhineland in 1919; can anyone identify the units? **(4)** Stirling IV PW443:5G-Q refuelling at Shiabah on the way to Allahabad with freight, Sept 1945. **(5)** Another Stirling IV, LK554, stranded at El Adem with engine trouble en route to Shepherds Grove from Shiabah, Oct 1945. Both pictures by Malcolm Flack taken while he was with 299 Sqn. **(6)** A flight of 'midnite blue' Corsair IVs of 1846 Sqn, FAA, flying from RNAS Sembawang in late 1945. 'D' on tail signifies HMS *Colossus*. Picture by Clayton Butler. **(7)** Fairey Battle L4935 was the first built by Austin at Longbridge. Picture by R. Hodgkinson.

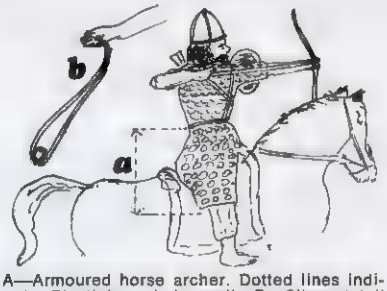


7

Roman Friends and Foes—from page 210

pin, the thicker part of which is pushed into the top half of the figure, and the point pushed right through the lower half leaving about a quarter of an inch projecting to attach to the horse (see diagram). The Arab lower half, if used, will need to have the robes cut away so as to leave rather baggy trousers. The US cavalryman can be left as he is. Once the figure is securely pinned and glued to either an Arab or US cavalry horse, the lower mail or scale armour can be added by using thin flakes of Plasticine spread around the thighs to represent the mail skirt to protect the legs.

The effect of mail or scale armour is obtained by making small depressions in regular lines around the Plasticine armour with the end of a sharpened matchstick. The whole



A—Armoured horse archer. Dotted lines indicate Plasticine chain mail. B—Sling detail with 'shot' from blob of cement.

of this section should be given a coat of banana oil in order to 'fix' it, remembering not to press in the banana oil too much, as this will smear the Plasticine. The quiver and sword are glued back in place, the quiver high up on the back as shown. A small round shield has been added to all my figures, but this is optional—there were many permutations of bow/shield/sword/lance, ending up with the Byzantine cavalry, who carried the lot, and armour as well! In the figure shown the projecting brim at the rear of the helmet has been cut down so as to leave him with a round pointed helmet.

Colouring of this figure can be silver or aluminium for the armour, tinged with dark blue (matt) to represent iron, or bronze. The breeches can be almost any colour. Horse trappings, saddles, and so on can be quite sober, or really flamboyant, according to taste. Straps, boots and scabbard can be painted to represent leather, while the figure himself should be rather swarthy, for preference, and with a 'full set' beard.

Letters to the Editor

Typhoon markings

WITH reference to last November's cover photograph of Hawker Typhoon 1B HH-N, EK 13?, *Dirty Dora*, I can supply some additional information.

Firstly, the airframe number is EK134. In January, 1943, this aircraft still had an all-white nose, but after its move to Odiham on January 14, this was painted green and grey again, and the black and white underwing striping was added. At this time the spinner was left not sky but white. It would be tempting to suggest that not only was the spinner white, but that the rear tail band was also of this colour, as the two appear to be the same colour—the spinner definitely was white, both through official policy at the time to avoid confusion with the Fw 190, which also gave rise to the underwing stripes, and through the first-hand account given to me by the father of a friend of mine about his experiences with 175 Squadron aircraft — but his records make no mention of the colour of the tail band.

At this time the squadron codes were in sky, the '4' of the serial being painted over the first 'H' of the code.

While at Colerne in April, 1943, EK134 was damaged in the region of the starboard fuselage roundel. When it was repaired, this area was repainted, but the paints used came from a different batch, and it can be seen that there is quite a difference in the shades under the roundel from the shades elsewhere. It was also necessary to repaint a part of the squadron code, and as no sky paint was at that time available all the codes were repainted in light grey paint, of which there was plenty. It was here that the '4' of the serial was obliterated, and either because of an oversight or through lack of time the '4' stayed hidden.

As I have said, the above information is only the data from another person's records, but there is no doubt in my mind that it is accurate, especially as it explains all the anomalies shown in the photograph.

Malcolm Oliver, Ruislip, Middx.

Michael Bowyer writes: *A most interesting letter. It could well be that the spinner is white, although it is difficult to decide by looking at the illustration, but I would question the matter of a white rear fuselage band. There were always anomalies in aircraft markings, but of the many Typhoons and Spitfires that I had close access to I never saw one with a white band. The shades of sky varied however from pale to almost white after the introduction of this particular shade (more correctly called Sky Type S to differentiate it from the duck egg tones of mid-1940).*

My remarks about the toning of the green beneath the starboard roundel were really intended to discourage modellers from producing Typhoons in the rather garish shade of green elsewhere evident. The grey on this particular machine is certainly what became officially known as 'Ocean Grey', a shade of dark sea grey with a bluish tone. I think that at the time when this particular aircraft was in use this shade was still known as dark sea grey, but re-named. Not all home based fighters wore it however, but Typhoons and some Hurricanes employed on offensive duties wore it whilst those for home service somewhat hypothetically had the other shade. Mr Oliver's remarks make most interesting reading; would that others could contribute such excellent comments on photographs, etc.

Letters to the Editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit of their choice. We are always pleased to receive your comments and pictures, which will be considered for publication. Submitted material and pictures can only be returned if accompanied by a stamped addressed envelope, and the Editor cannot accept responsibility for safe keeping of any such contributions, neither does he necessarily agree with comments expressed by correspondents in the letters columns. Please note that any letters anticipating a reply MUST be accompanied by a SAE or stamp.

Rawlplugs

I WONDER how many readers have discovered the usefulness of Rawlplugs? Coming in different sizes and thicknesses they are just right in texture, colour, and scale to represent logs in 00 and H0 scale. A bundle of them tied together with cotton makes an excellent crib for mounting on World War 1 tanks. Some of the other model uses for Rawlplugs that I've discovered include: (a) as loads for model railway wagons and goods yards; (b) as rafts with Airfix 00 scale soldiers; (c) for building realistic log cabins, lean-to sheds, and stockades, etc, in 00 scale; and (d) as barricades or obstacles in wargames. One hundred 1½ inch Rawlplugs cost only a few shillings. Rawlplug also make an excellent cheap plastic wood which spreads very easily.

P. L. G. Ware, Pinner, Middx.

Whirlwind fittings

I HAVE only just received the November, 1967, issue and it was with surprise and interest that I read M. Verrier's letter. I must take up the cudgels for accuracy with regard to his description of the interior and fittings of the ASR Whirlwind. Behind the pilot and working towards the sharp end, the following equipment is found: Verrys cartridges (pistol by navigator's right foot), cockpit lighting console, UHF-1/C controls and then VHF selectors and a Decca flight log on the cockpit coaming. Crew's immersion suits are as stated though the winchman's is sometimes all yellow.

What Mr Verrier described as 'weapons attachment points' are, in fact, Schermully flare points to illuminate the area beneath the aircraft in the event of a night engine failure.

I liked Mr Dodsworth's airfield scene (same issue), but what about a trolley accumulator? This delightful method of breaking an erk's back and increasing his command of English is issued even today by MOD and is supposed to be used to start aeroplanes. No good airfield is without a few.

Flt Sgt A. More, 1563(H) Flight, BFPO 53.

Father's aircraft

ON looking at the picture of the Sunderland III in the Photopage feature last month, I discovered that it was the machine in which my father flew as top gunner with 201 Sqn from Castle Archdale, Loch Earn, Northern Ireland, before the aircraft was handed over to 10 Sqn RAAF.

Paul Kirkwood, Leyton, London E10.

Steering Porsche

IT may be of interest to others, to learn that it is possible to improve a little on the Airfix static kit of the Porsche Carrera 6, by filing the square pegs on parts 21 and 22, until they are almost round; and filing also the corresponding holes in parts 15, 16, 19 and 20.

The foregoing modification makes it possible for the wheels to 'steer' from side to side.

Personally, I found the Porsche model otherwise satisfactory and I look forward to the possibility of Formula 1 cars being produced in the same series.

J. Browne, Blackpool.

Churchills at Alamein

IN your August, 1967, issue, Peter Chamberlain mentioned the fact that three Churchill IIIs were used at the Battle of El Alamein, but does not mention their fate. They were, in fact, organised as a troop and were attached to 7th Motorised Brigade for testing in desert conditions. They took part in only one action. This was an abortive attempt by the Bays to take Point 33 and the result of the engagement was that one Churchill was knocked by an 88 mm and the main armaments of the other two were destroyed.

J. C. Appleton, London, SW20.

Not a Topsy

I WAS interested to see in Photopage for August, 1967, the rare photo of a Topsy from Mr G. V. Potts. But I think the aircraft must be a Hichory. The Ki-57 Topsy was a variant of Ki-21 Sally and the wing and undercarriage of Topsy were basically similar to those of the Ki-21. The main undercarriage of the

Continued on next page

Letters—continued

Ki-21 was similar to that of the Dakota and not a single leg. The Ki-54 Hichory was a trainer produced in four variants as follows: Ki-54-KO (pilot training), Ki-54-OTSU (weapons trainer), Ki-54-HEI (transport — with no top turret), Ki-54-TEI (Coastal Command trainer). I think Mr Potts' picture is of the Ki-54-HEI variant.

Akita Kikuchi, Saitama, Japan.

Mr Kikuchi may well be right—can anyone else verify this?—EDITOR.

Wrong codes

IN the Fighting Colours article, page 108, of the November, 1967, issue, a Spitfire, L1059, coded OU-B is mentioned. As no other mention is made of this code I would like to query it. Should it be UO as given for 266 Sqn on page 110 in the same article? I would like to take this opportunity of congratulating Mr Bowyer for a truly excellent series of articles which, as a modeller, I find most useful.

R. F. Barker, Loughborough, Leics.

Yes, you're right, it should be UO. We misprinted.—EDITOR.

Track corrosion

NOTICING Koyu Go's letter about corrosion caused by Airfix tank tracks, I recalled two methods I've found successful in stopping or slowing down the action. For those who prefer moving tracks, soak the complete tracks in a weak detergent solution overnight before fitting them to the model. Meanwhile, paint the bogie wheels, etc, and allow to dry thoroughly. This delays corrosive action, I've found, by up to 9 months. When you notice corrosive action starting, try removing the tracks and soaking once more.

In the second method, soak the track as before and then coat in clear varnish. Fit the tracks and then paint the complete suspension, tracks as well. This does, of course, mean that the moving parts are sacrificed.

P. J. Charlton, Aylesbury, Bucks.

Halifax error

IN the Halifax drawing in the December issue, the outside prop blades are the wrong way round. Also this error is repeated in the front elevation of the inner engine nacelle. The vertical blade is twisted the wrong way.

Barry Jones, Birkenhead.

Yes, our mistake. Humble apologies. Anyone making this model should reverse the twist in the blades as mentioned above.—EDITOR.

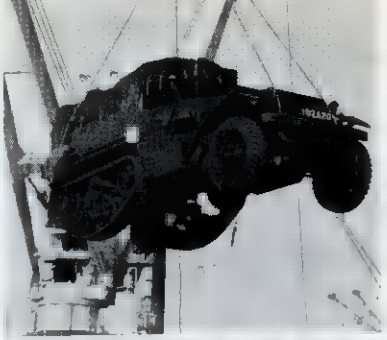
Bus models

THE October issue has just reached me and I was most interested in Norman Simmons' article on 00 scale bus modelling, as several years ago I made a considerable number from postcards. These, alas, are now destroyed, but I recall that I solved Mr Simmons' problem of how to cut out the curved corners of windows. There were in fact two methods. One was to use a leather punch of the right circumference to punch out the corners, joining these holes with a knife cut in the usual way. For my own use I had an ordinary screwdriver shaped at the blade end by a mechanic friend and I use this as a punch, not being able to afford a proper leather punch. This method takes all the tediousness out of this part of the job.

I did not use Mr Simmons' 'sandwich' method for the bodywork as I felt it took too long, and I sometimes drew the entire body in one continuous strip on a length of card thus requiring it to be bent at all corners except the one where it was glued. This did away with cutting at least four different sides. The old half-cab jobs were more demanding than the full-fronted designs which are a blessing to the bus modeller!

The problem today is the wheels. Pirating these from an Airfix kit would cost a fortune, especially in New Zealand! A firm called Modelcraft produced scale wheels and sheets of hub designs as well. I would really like to know whether any such are still available, or whether anyone knows of a similar supply. I hope many more Bus Model articles appear.

J. C. Mulvagh, Lower Hutt, New Zealand.



Reader Victor Young sent this picture of a M3 Half-track being loaded aboard an Israeli freighter for shipment to Israel in November, 1967. One of a large consignment, it appears from its 'mint' condition, bronze green finish, and registration, to be ex-British army reserve stocks.

Ex-WD vehicles

READERS might be interested in the following ways of 'civilianising' the Matador and Quad kits. These offer tremendous scope to the modeller, as they are not standard vehicles. The details given below are for vehicles used by the Dorset County Council.

The Matador is used by the Roads and Bridges Department, and has dark green cab and chassis with body sides of silver. The model is made up exactly as in the kit, but the cab hatch is blanked off, and a small winch is added to the front bumper.

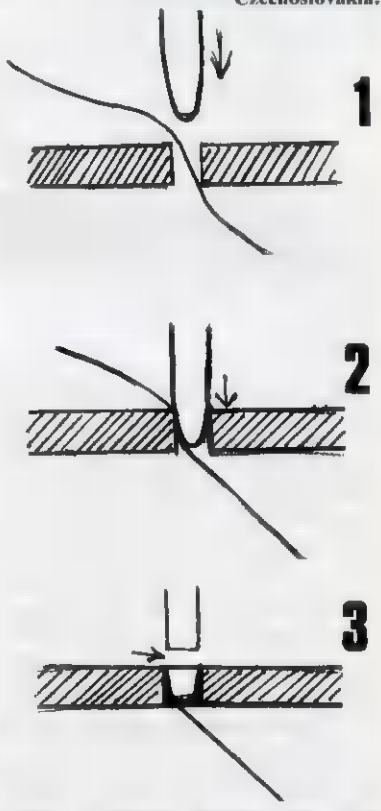
The Quad has a snowplough made of a rectangular piece of plastic card bent, and angled to the nearside. This is attached to the front bumper with two small pieces of plastic sprue. An orange flashing light is added to the cab roof, and the whole thing is painted gloss yellow.

S. Palmer, Gillingham, Dorset.

Nylon rigging

RIGGING improves greatly the authentic look of veteran aircraft models, but many modellers omit this step, being afraid of spoiling their almost finished model. Cementing nylon thread on to plastic is generally recommended, but I don't find this procedure a clean and safe one, as polystyrene cement doesn't stick to nylon well. To overcome this difficulty I prepare a thin plastic rod, sanding down one of its ends slightly conical. Care must be taken to keep the cross section as circular as possible, which is best accomplished by sanding the rod chucked into an electric drill. The conical end must fit tightly into small holes (I use a 0.5 mm drill) drilled in places, where the rigging wires are to be attached. After pulling one end of a nylon monofilament thread through the hole, I dip one end of the rod into liquid polystyrene cement (or other solvent) for 1 or 2 seconds, and press it into the hole too. The thread is fixed instantly and the next attachment can be made immediately thereafter. Excess rod and thread is cut off with a razor blade when dry. Careful modellers will fill the holes on the reverse side with a small bead of body putty and finish the whole operation with a light touch of paint. My drawings illustrate the principle.

Dr Ivan Stepánek, Brno 12, Czechoslovakia.



Above: *Sketches illustrate the three stages of reader Stepánek's method of rigging with nylon monofilament.*

SHERMAN BOOK

Readers will be interested to hear that the popular history of the Sherman tank serialised in AIRFIX magazine in 1966-67, is to be published in book form next month by Arms and Armour Press. Greatly expanded with bigger pictures than could be included in the magazine, the book will also feature specifications, production summaries, drawings, and a revised text. Further details of the book titled *The Sherman—an illustrated history of the M4 Medium tank*, by Peter Chamberlain and Chris Ellis, will appear in our next issue.

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▮ 6	M24 Chaffee Tank	1/55	11/9
B 7	JS111 Stalin Tank	1/35	45/–
B 8	T-55 Tank	1/35	29/11
B11	Chieftain Tank	1/35	45/–
B12	Scorpion Armoured Car	1/35	15/11
B13	Coventry 11 Armoured Car	1/35	15/11
B14	Saladin Armoured Car	1/35	17/11
B15	M8 Armoured Car	1/35	17/11
B18	SU 100 Assault Gun	1/35	24/6
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Ex-US fighters—from page 232

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Douglas DB-7 Havoc II : W8274, W8277, W8317, W8328, W8341, W8352, W8366, W8369, W8393, W8396, AH431, AH432, AH434, AH437, AH445; AH446, AH447, AH450-53, AH455, AH458, AH460, AH462, AH470-73, AH478-79, AH481, AH483, AH487, AH490, AH491, AH497, AH500, AH502-3, AH505, AH509-10, AH512, AH518, AH520, AH523-25, A528-29; AH431, AH432, AH434, AH436, AH444-47, AH450-51, AH453, AH460, AH468, AH470, AH472-73, AH478-79, AH483-84, AH491, AH497, AH503, AL750, AL774, AL778, AL780, all Turbintite equipped Mk. IIs.

Also operated in a fighter role were these Boston III intruders: W8256, W8262, W8264, W8266, W8268, W8278, W8281, W8283, W8284, W8290, W8292. Some Turbintite equipped Boston IIIs in the W series were W8257. W8265, W8275, W8276 and W8300. In addition the following were Boston IIIs converted into 'solid nosed' night-fighters : W8274, W8277, W8317, W8328, W8341, W8352, W8366, W8369, W8393 and W8396

North American Mustang 1 : AG345-664, AL958-AM257, AP164-263.

Lockheed Lightning : 143 Mk I ordered as AE978-AF220 and 524 Mk IIs as AF221-744. Of these very few reached Britain, although many flew with British serials and quite a number in RAF camouflage. AE978, AE979, AF105, AF106 and AF108 certainly reached Britain for trial purposes.

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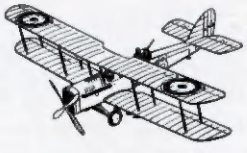

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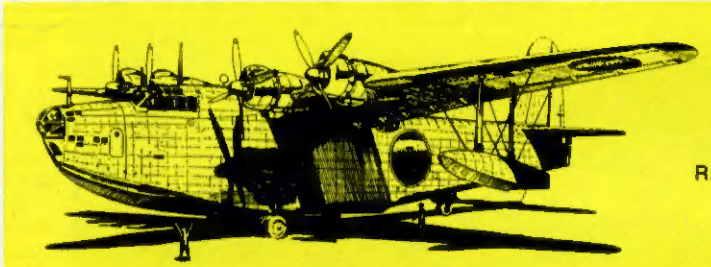

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